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Improved Automatic Churn.

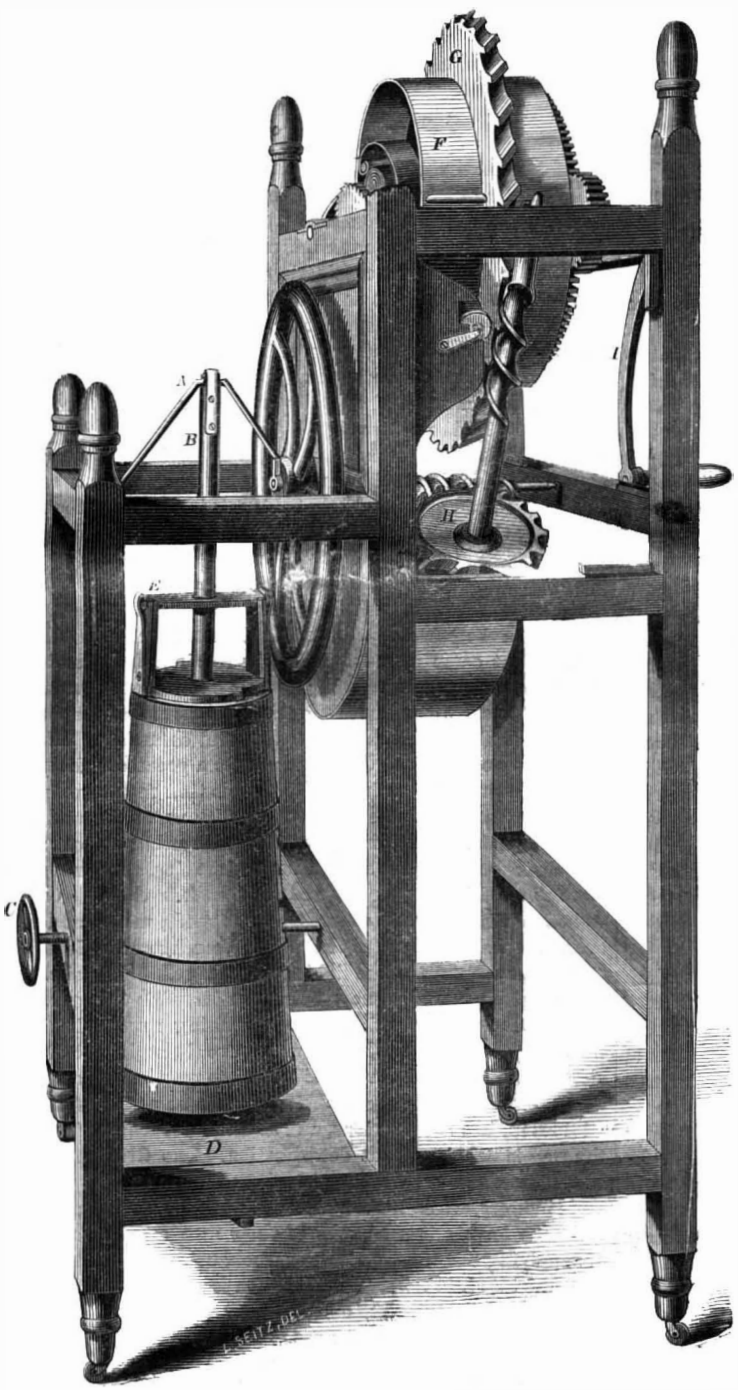
There is no household labor on the farm more exhausting than that of churning. It is usually regarded as belonging to the housewife's department, and while it cannot come under the denomination of "light labor," which is considered as the labor best fitted for feminine muscles, it nevertheless is done almost exclusively by the fairer sex. Many devices have been patented looking to a diminution of this work, but most of them aim merely to shorten the time employed, and do not materially make the work, while it lasts, less onerous. The invention herewith illustrated is, however, intended to do the work itself, requiring only oversight.

As may be seen in the engraving, it consists of a common churn, suspended on centers in a frame, and worked by simple machinery, driven by a coiled spring, similar to but more powerful than a clock spring. As the crank, A, revolves, it not only works the dasher, but, at the same time oscillates the churn itself, thereby giving a double motion and hastening the breaking of the butter vesicles. The stem, B, of the dasher is attached to the crank, A, by a spring cap, which can be instantly removed, and the churn, by unscrewing the pivot wheel, C, be allowed to rest upon the hinged platform, D. When the churn is at work, one end of the platform is allowed to drop to the floor to allow the churn to swing. It is secured in place by a spring bolt. The pivots which suspend the churn fit into depressions in strips of metal on the sides of the churn; these depressions being placed in a vertical row, so that the equilibrium of the churn can be assured to correspond with the amount of milk or cream it contains. By this means the churn itself becomes a nicely-poised pendulum, reducing the friction, and consequently the amount of power necessary to drive it. The dasher handle is guided by a yoke, E, which is held in place by a spring latch.

The motive machinery, however, is the principal peculiarity in this device. The cap that covers it, and part of the box containing it, are removed in the engraving, to show a portion of the working parts. Inside the drum, F, is a coiled spring which gives motion to the machine. The wheel itself, G, is a modification of the worm gear, the teeth, however, being cut at an angle of about forty-five degrees, and curved on their working faces.

They engage with a very coarse screw, or rather a twist similar to that of an auger. As the drum revolves, the teeth of the wheel act as cams on the incline of the screw thread, giving for each tooth just one-half a revolution to the screw. On the screw spindle is a smaller worm gear, H, which runs the shaft that drives the crank by another screw. The spring is wound by means of the crank, I, and a pinion and gear.

These churns are made of different sizes, containing, six, ten, and sixteen gallons. The machinery can be wound up in a few seconds, when it will run from twenty-two to thirty minutes, sufficiently long to churn butter from either cream or milk. There is no heavy lifting to be done, as the churn need never be removed from the machine when it contains cream or butter, but only when empty to clean it. No particular knowledge of mechanics is necessary in the operator, as the contrivance is really self-operating,



WILSON'S AUTOMATIC CHURN.

This device was patented May 8, 1866, by N. E. Wilson. Rights to manufacture for districts and States can be obtained of J. J. Burns, Fairmount, West Virginia, or Kenyon & Co., 151 Broadway, New York City.

THE high specific heat of water enables it to heat over three thousand times its own bulk of air, in cooling through one degree of temperature.

Effect of the Removal of Forests.

At one season the earth parts with its warmth by radiation to an open sky—receives, at another, an immoderate heat from the unobstructed rays of the sun. Hence the climate becomes excessive, and the soil is alternately parched by the rigors of winter. Bleak winds sweep unresisted over its surface, drift away the snow that sheltered it from the frost, and dry up its scanty moisture. The precipitation becomes as irregular as the temperature. The melting snows and vernal rains, no longer absorbed by a loose and bibulous and vegetable mold, rush over the frozen surface and pour down the valleys seaward, instead of filling a retentive bed of absorbent earth, and storing up a supply of moisture to feed perennial springs. The soil is bared of its covering of leaves, broken and loosened by the plow, deprived of the fibrous rootlets which held it together, dried and pulverized by sun and wind, and at last exhausted by new combinations. The face of the earth is no longer a sponge, but a dust heap, and the floods which the waters of the sky pour over it hurry swiftly along its slopes, carrying in suspension vast quantities of earthy particles, which increase the abrading power and mechanical force of the current, and, augmented by the sand and gravel of falling banks, fill the beds of the streams, divert them into new channels, and obstruct their outlets. The rivulets, wanting their former regularity of supply, and deprived of the protecting shade of the woods, are heated, evaporated, and thus reduced in their summer currents, but swollen to raging torrents in autumn and in spring. From these causes there is a constant degradation of the uplands, and consequent elevation of the beds of water courses and of lakes by the deposition of the mineral and vegetable matter carried down by the waters. The channels of great rivers become unnavigable, their estuaries are choked up, and harbors which once sheltered large navies are shoaled by dangerous sandbars. The earth, stripped of its vegetable glebe, grows less and less productive, and consequently less able to protect itself by weaving a new network of roots to bind its particles together, a new carpeting of turf to shield it from wind and sun and scourging rain. Gradually it becomes altogether barren. The washing of the soil from the mountains leaves bare ridges of sterile rock, and the rich organic mold which covered them, now swept down into the dark low grounds, promotes a luxuriance of aquatic vegetation that breeds fever, and more insidious forms of mortal disease by its decay, and thus the earth is rendered no longer fit for the habitation of man.—*Marsh.*

THE total mechanical force developed by changing one cubic inch of water into 1,700 cubic inches of steam is nearly one tun.

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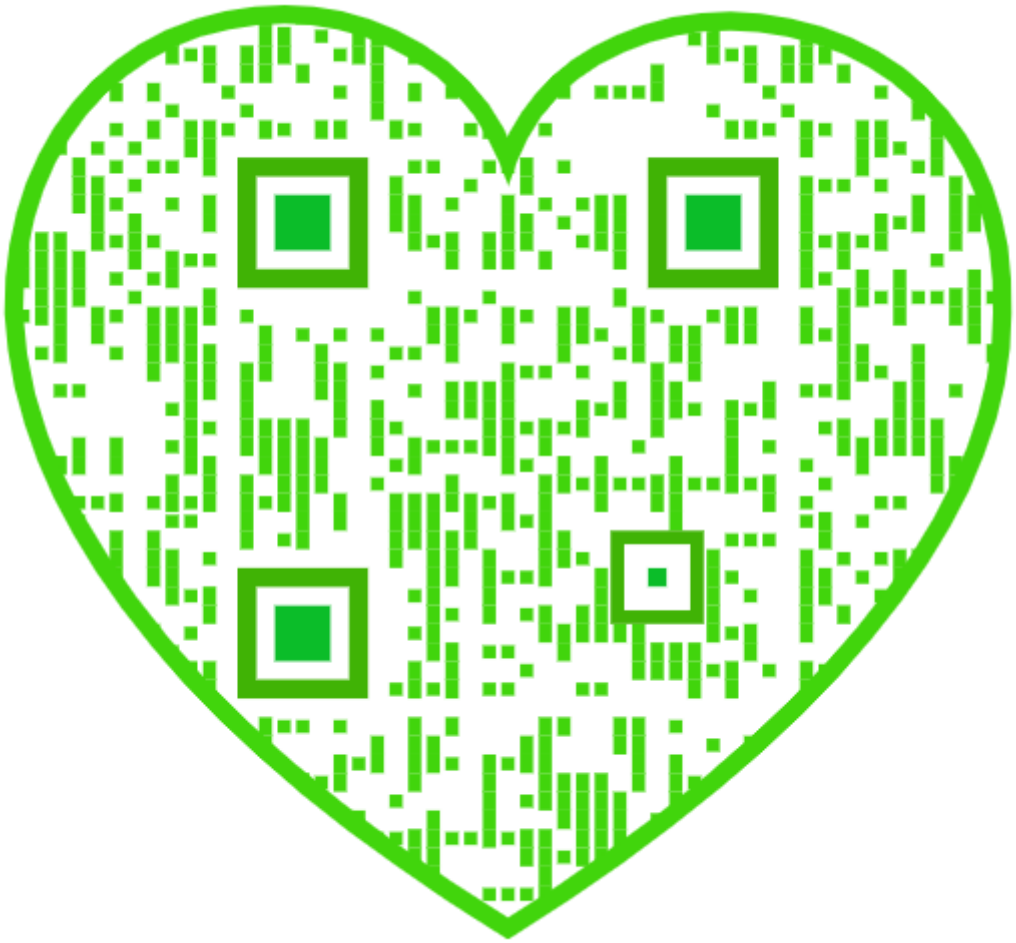

[From our Foreign Correspondent.]

RAILWAY ENGINEERING IN LONDON.

Transportation by Pneumatic Tubes—River Steamers—Railway Systems—Steel Rails.

LONDON, Nov. 1, 1866.

In my last letter I endeavored to describe two of the means of metropolitan intercommunication in use here, and to complete the account, it is proper that I should allude briefly to two others. Before doing so, however, I will correct an error made in my statement that the station at Charing Cross belonged to the London, Chatham and Dover Railway Company. Both that and the Cannon street station are the property of the Southeastern Railway Company. They were built, with the line of railway connecting them, by a distinct company, simply for metropolitan traffic, and were afterward purchased by the above-mentioned company. The expense of carrying out this undertaking, including purchase of property, removal of buildings, and construction of the works, was, of course, something enormous, but it is worth while for us to note, as an answer to those who urge the impossibility of similar works among us, that this expense is readily met by matter-of-fact Englishmen in view of the immense traffic carried on over such lines.

One of the other systems to which I refer is the pneumatic—works for a short line under the Thames on this principle being in progress. The tubes of the Pneumatic Dispatch Company have been in operation for more than three years in conveying parcels, and the applicability of the system to carrying passengers has been amply demonstrated. The line of the Waterloo and Whitehall Railway is to cross the river just above Hungerford Bridge. The tube is made in four sections of 330 feet length each. The ends of these will be connected by being introduced into junction chambers formed in the brick piers on which they rest, the joint being made water-tight. These piers do not rise as high as the present river bottom, and a channel will be dredged across the river to receive the tubes, though the principal weight will be supported on the piers. One of the tubes is now completed at the ship-building yard of Messrs. Samuda, at Poplar, five miles below its intended situation. It is 12 feet 9 inches in diameter, inside, and is of three-fourths-inch boiler plate, surrounded by four rings of brick work, which is firmly held by cement and flanged rings riveted to the plates. Its weight as it lies is nearly 1,000 tuns. To convey it to its destination, the ends are to be closed by bulkheads, and then, having a buoyancy when in the water of about 300 tuns, it will be floated up the river and brought into position over its piers. An inner ring of brick work will then be built inside it, and just enough water admitted to sink it upon its foundation. The joints between the tubes and piers will then be made water-tight, and the bulkheads removed from the ends of the tubes. The clear span of each tube will be 221 feet.

When this line is got into operation, we shall know more about the merits of the pneumatic system, but the experience already obtained leaves no doubt of the success of the plan. The last means of getting about that I will mention is not a new one, but it is one which it has often appeared strange to me that we had not long ago adopted in New York to shorten the daily inconvenience of the half or three-quarters of an hour's ride up and down town. It is by very fast boats on the river. Of the comfort of these boats as they exist here I shall say nothing, for there is no such thing in connection with them, not even a cabin to shield one from the rain, unless, indeed, he choses, as few do, to crawl down into the hold for shelter. But as we know how to build boats in America, we need not consider that point, but look at the advantages of the system, supposing it properly carried out. The boats on the Thames are, say, 100 feet long by 12 or 13 feet beam, are fitted with a pair of low-pressure oscillating engines, and paddle wheels with feathering floats. The smoke pipes are provided with a hinge joint, enabling them to be lowered in passing under the bridges at high tide. They run at a very high speed, stopping about every half mile, and conveying passengers within the usual city limits for 1d., and as far as Greenwich and Woolwich for 6d. Despite their defects they are a very great convenience, and I see no reason why a line of boats, like the *Sylvan Stream*, starting from the extreme end of the business portion of New York, and landing passengers at convenient intervals up town, would not be far more convenient than the present crowded horse cars, and be patronized accordingly.

The railway system of England is one of the best creations of her engineering genius, and presents a striking contrast to our own in stability and efficiency. The nature of the soil in many cases adds greatly to the necessity for, as well as the expense of, the most thorough system of drainage, and requires great care to be taken in forming cuttings and embankments. But aside from this, in all cases, the works are carried out in the most complete and finished manner. All slopes of earth are carefully sodded, which, of course, helps greatly to prevent slides and washing away. Preparatory to this, however, provision is made for allowing the water that may find its way beneath the surface, freely to escape, by, for instance, digging channel ways in various directions, where the soil is of a clayey nature, and filling them with broken stone, or by imbedding perforated drain pipes, or in some other similar manner. Where rock cuttings occur, it is not unfrequently the case that the surface is dressed off to a fair face with a chisel. The ballast used is generally broken stone, or gravel, and is maintained in such a condition as firmly to support the sleepers and to allow of thorough drainage. The sleepers are of dressed timber, generally about 9 inches by 4½ inches, and are very frequently, if not usually, creosoted to preserve them from decay. Some engineers, however, contend that though this may nearly double the life of a sleeper, yet considering the cost of doing so, with the interest, it is doubtful if it is worth while. The cost of sleepers is usually taken at 2s. 6d. each, and for creosoting 1s. extra. It is claimed by some, also, that creosoting causes the chairs to sink into the sleeper more than they otherwise would. The form of rail universally adopted in England is the double-headed, 5 inches high, and weighing about 80 lbs. to the yard. A usual length is 7 yards. The opinion of engineers is that this rail is none too heavy for the present heavy traffic and high speeds with large and therefore destructive engines. When we reflect that the vertical stiffness of a 5-inch rail is three times that of one only 3½ inches high, we can see how much better adapted such a rail is to bear the strains that come upon it. The rails rest in a chair on each sleeper, these being placed 3 feet apart, and in some cases even less. The joints are secured by fish plates, about 14 inches long, the joint occurring between two sleepers. This reduces to a great extent the hammering action of the wheels that occurs where the ends of the rail rest, as with us, on an anvil, or chair. The portions of the rail resting on the chair become indented after a time (unless a piece of wood is interposed), and this makes them defective when turned over. On some roads, moreover, it is held that rails that have been reversed after wear are much more liable to breakage.

The great question now being considered is the introduction of steel rails. The surprising results that have appeared where these have been laid alongside of iron rails, in places subject to very heavy traffic, have already caused their adoption on nearly all lines for use near stations, and at all places where the way is liable to great deterioration. The Great Northern Railway has adopted them for use on all their inclines, while the London and North Western Company have erected works of their own capable of supplying 350 tuns of steel per week, 300 of which is worked up into rails. The question is merely one of first cost and interest, and it is now pretty generally conceded that steel rails at £15 per tun, lasting 40 years or longer, are cheaper than iron at £7 10s., lasting 8 years, especially when it is considered that, on account of its superior strength and stiffness, a steel rail weighing 70 lbs. to the yard is more than equal to an iron rail weighing 80 lbs.

At first it was urged that steel rails, when worn out, would be useless from the impossibility of piling and re-rolling them, while old iron rails could easily be re-worked in any desired manner. All fears on this ground have, however, proved quite unnecessary, as numberless uses have been found for which the old steel rails, as well as the crop ends formed in their manufacture, are desired, so that these bring readily from £7 to £8 per tun. Among these uses may be mentioned rolling into plates, to be used in making kettles, by stamping, instead of charcoal plate; plates for nail cutting, telegraph wire manufacture, and hundreds of other purposes for which the metal is extremely valuable. Or it may be remelted in the converter or otherwise, and be again produced as rails. As stated in my last letter, the production of steel rails in England already amounts to 1,000 tuns per week.

The form of rail in vogue on the Continent is the single headed, but, like the English, 5 inches deep. Here, also, steel is taking the place of iron on many lines, with a corresponding decrease in the expenses for renewals.

No railway line in England is allowed to cross another, on the same level, and even branch lines of the same road cross the main line by a bridge. The network of viaducts near large cities, and especially London, required for this purpose, is something bewildering, it being not at all unusual to see roads crossing each other three deep. It is difficult to see how traffic would be even possible, to say nothing of safe, without this arrangement, in places where from 600 to 700 trains pass daily. Also at all carriage roads on the line, if not provided with a bridge, as the principal ones are, a suitable gate and gate keeper are employed, and everything is done to insure safety. Passengers are in no case allowed to cross a line of rails at the stations, but bridges or tunnels are provided for this purpose, all of which precautions it would be well to introduce into our own enterprising but unsystematic country. Increasing business and experience, however, will, no doubt, produce the same results there as they have here. SLADE.

Practical Hints.

No. 2. TO KEEP MERCURIAL STEAM GAGES PERFECTLY CLEAN INSIDE.—General experience has shown that the mercurial steam gages in the course of time often become dirty in their interior by mercury and its oxide adhering to the glass, so that it is very difficult to see the position of the surface of the mercury. The consequence is, of course, an uncertainty as to the amount of steam pressure. A simple and very effective remedy is, to bring on the surface of the mercury a little glycerin; this serves as a lubricator for glass and mercury, covering the surface of both, preventing their immediate contact, and consequently all adhesion, and keeping it always clean and bright. This simple remedy is spoken very highly of by all who have tried it.

No. 3. WHAT IS THIS GLYCERIN, AND WHAT IS IT MADE OF?—This question being often asked by those who observe that glycerin is now-a-days coming more and more in use for different purposes, we take this opportunity to give a short explanation about its nature and origin.

Glycerin is one of the constituents of all animal and vegetable fats and oils; it is not found in petroleum nor other oils of mineral origin, nor in ethereal oils. A very large number of compounds consist of acids, which are combined with other substances having the opposite qualities of an acid, and are called bases; these bases commonly neutralize the acids; that means, they destroy the acid properties, form a compound which is called a salt, and which is usually neutral; for instance, so is green vitriol formed of sulphuric acid, neutralized by the base protoxide of iron. In the same manner the animal and vegetable fats and oils are formed by the so-called fatty acids, neutralized by the base, glycerin. The principal fatty acids are stearic and oleic acid; the first is solid and hard like white wax, and from it the so-called stearin candles are made; the last is fluid and now extensively used to grease wool when weaving it into flannels, cloths, etc., as it is more easily removed by washing than the oils themselves.

The art of making soaps consists in combining these acids, contained in the fats and oils, with other bases stronger than glycerin; these bases are potash and soda; the first forms a soft, the last a harder soap; the glycerin is separated or set free in this process, part of it remains mixed with the soap, and the other part is lost during the manufacture, being washed away; the saving of it would be a most important economy, and several chemists have lately occupied themselves to accomplish so desirable a result.

V.

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THE ORIGIN AND COMPOSITION OF PEAT.

Whatever dispute there may be as to the origin of coal, there can be no valid question that the composition of peat is mainly vegetable. The evidence of this is of a *prima facia* character; for even those varieties which appear to the unaided eye but masses of smooth, oily muck, show, under the microscope, the remains of minute mosses, which flourished and died through countless generations, and sank below the water which sustained and supported them while living.

On many a plain, on lofty table lands, in gorges and valleys, wherever water gathers, from a thousand sources miniature pools or extensive morasses are formed by the water being held stagnant and imprisoned by the solid clay or hard rock beneath.

On the surface of these silent waters confervæ, so minute as to be visible only as a green scum, appear, live their brief life, and sink to the bottom. Others immediately take their places, live and die, until film after film is deposited. In time this very gradual accumulation becomes a palpable mass; not, indeed, until countless generations of these confervæ have lived and died. Particles of sand and stones gather and are held; the decaying roots of adjacent plants, killed by the sluggishness of these waters of death, help the accretion of the mass. It rises year by year until it affords a foothold for water fowl, which add their qualities of guano, and at last it covers the dark waters and forms a peaty mold extending to the surface.

These changes have been passive; but the water still accumulates, and at length becomes aggressive, breaking through the felt-like mass and destroying the daring vegetation that attempts to procure a foothold over the treacherous slime. Below all is the water; next, the black peat, composed of these almost invisible confervæ; then the closely interwoven mummies of roots, which make the surface turf, or peat.

Vast regions of the globe, called by geographers "solid land," are covered by these peat bogs, or treacherous morasses. The table lands of the South American Cordilleras; the immense plains of frozen Siberia; about one-tenth of the island of Ireland; large parts of Scotland, Germany, Jutland, Norway; the gorges and valleys of the Alps, and innumerable localities on this continent, are occupied with these moors. Within the limits of the polar circle and under the burning sun of the tropics they exist and increase. They do not rest. Their quiet is only apparent. The slow but sure progression of the moor is insured by the increase of water and the accumulation of decayed and dying vegetation; so that at times the air and gases, imprisioned beneath the tangled network of roots and fibres and the coat of deceptive turf, assert their right and burst all restraints, sending forth streams of black, liquid mire, which overwhelm or destroy all within their reach.

But the silent and almost unobserved action of these peat marshes is not less remarkable. Quietly, gradually, but irresistibly as fate itself, wherever they exist, they exist but to destroy. They undermine the roots of proud forest trees and sink them, still upright, in their miry depths, beyond the reach of sunlight and air. Or, they cut them down and swallow roots, branches, and foliage beneath their insatiable waters.

Water either in motion or at rest is a great destroyer. Where the solid land or dense vegetation does not offer a bar to its aggressions, it comes in to usurp and reign. We have in our recollection one notable instance. In provincial times a large tract in the little State of Rhode Island was a thick cypress or cedar swamp, the resort of innumerable animals as wild as their habitation. The trees were cut down, the vegetation killed by fire, and the waters came in, and now the tract of salt water, called "Hundred Acre Cove," covers thousands of acres and affords fine fishing grounds, rendezvous of water fowl, and a magazine of fuel and fencing material by its wealth of stumps and roots.

What are commonly known as salt marshes are now or are becoming beds of peat. The accumulation is very gradual, the growth of one season forming a thin layer to be succeeded by another. The rank grasses, rushes, and other water plants and the shrubery, which retains a precarious foothold on the surface, add to the mass year by year. In time what was a treacherous morass becomes apparently *terra firma*, and more advanced forms of vegetation take the place of the aquatic growth; a forest rises over a marsh. The marsh, however, is still there, and below the roots of the trees is a spongy bed of peat. The sea itself holds in its relentless grasp vast deposits of this substance, destined perhaps hundreds of thousands of years hence, to furnish fuel and light to other races of man. The sea in many places is making encroachments on the land, or rather the land is sinking below the sea level. Where, as in the case of the "Hundred Acre Cove," the barrier to the sea has been removed by human agencies, the ocean has usurped and held dominion.

Even beneath the shade of forests growing on solid ground, peat has formed and is in process of formation. The foliage of the trees, with the countless shrubs that grow in dank luxuriance in the impenetrable shade, decay and form layer after layer of soft, slimy substance which becomes in time concreted into genuine peat. Thinning the forest dries the soil, and in time the peat is a dry, fibrous substance, naturally prepared for the use of fuel.

MISCELLANEOUS SUMMARY.

THE New York *Sun*, in a series of articles describing how the city is fed, gives some interesting statistics. The estimate is made that 5,525,000 pounds of beef, 112,500 of mutton, 72,000 of veal, and 2,400,000 of pork, are sold every week in Washington Market. The consumption is less during the months of March and April, owing to the abundant supply of fish. The daily quantity of milk used amounts to 125,000 quarts; of butter, 62,500 pounds; of cheese, 8,944 pounds. The actual table expenses for each day for every man, woman, and child of the population, averages 37 cents a head, divided as follows: meat supply, about 16 cents, fish supply, 2 cents, eggs and poultry, 2½ cents, vegetables, 3 cents, fruit, 1½ cents, bread, 7 cents, tea, coffee, and sugar, 5 cents; the total sum expended daily by the city in eating, $370,000.

A VETERAN CRANK.—A cast-iron three-throw crank had, until last week, worked in Messrs. Combe, Delafield and Co.'s brewery for nearly one hundred years, the father of the present manager having known it as "the old crank" early in the present century. It was 3 inches in diameter in the necks, and worked three single-acting pumps of about 6 inches barrel and 2 feet stroke. When the sluices have been accidentally closed, the pumps have brought up the 35-horse engine on more than one occasion. Last week, however, the old crank suddenly gave way in its ordinary work. The fractured parts are now at Messrs. Morland's factory, St Luke's. Such cast iron is not often to be had now-a-days.—*Engineering.*

CHILLED SHOT.—It appears a little singular that while the London *Engineer* denies that chilling or casting in metal molds gives the superior hardness to the Palliser projectile, and says that it is due entirely to the use of hard white iron, which would be the same if cast in sand, the *Engineering*, on the other hand, states "authoritatively that no specific brand or mixture is employed to the exclusion of others. The softest gray iron, although it will not chill when first cast in iron molds, will, on being then re-melted, chill deeply." When doctors disagree, etc.

HUMAN ELECTRICITY.—In looking over a volume of the "Quarterly Journal of Science," published in London in 1820, mention is made of the fact that Dr. Hartman, of Frankfort, had published a statement that he was able to produce at pleasure, an efflux of electrical matter from himself toward other persons. He also asserted that he had acquired this faculty to so high a degree that he could make a spark issue from his finger. The editor of the "Quarterly Journal of Science" regards the announcement of this now well-known phenomenon as very strange, fit only to be classed with the reveries of animal magnetism.

PATENTS IN AUSTRALIA.—We have established an agency at Melbourne, Australia, for taking out patents in that colony. Parties wishing information on the subject can obtain it by addressing the proprietors of this journal.

THE New York *Herald* is certainly a great paper. In a recent number, in discussing the meteoric showers that occurred in 1833, and about which so much has been said of late, the editor states that he was in the city of Washington sound asleep at the time, and was aroused from his slumbers by a colored person who informed him that the "Kingdom of heaven was coming." The editor then goes on to show what remarkable occurrences took place afterward, and draws therefrom the inference that following the appearance of these meteors, old political parties would be broken up, that His Holiness the Pope would migrate to this country and here establish the headship of the church, and wound up his observations with the pious hope that President Johnson and the Southern States would derive great spiritual comfort from these celestial visitors.

CAPT. J. NORTON, in a letter to the Dublin *Irish Times*, says he is the inventor of the elongated shot shell, and that the late experiments in America at Fortress Monroe, with Rodman's 12-inch rifled cannon, throwing elongated shot of 620 lbs., as recorded in the SCIENTIFIC AMERICAN, speak well for his invention. The report in this journal which the writer refers to, designates the elongated shot used in the experiments as the "Dyer projectile, constructed on the expanding principle, and quite recently brought to a state of perfection by Mr. Thomas Taylor of the Washington arsenal." Possibly the two claims may be entirely reconcilable.

CHROMO-LITHOGRAPHY.—This beautiful art is making a rapid progress in this country, a fact we are most happy to record. Messrs. L. Prang & Co., of Boston, by a great deal of conscientious labor, have succeeded in producing a great variety of the most elegant specimens of this art. We have now before us four specimens of their most recent chromos, copied from French water colors. These pictures, The Linnet, The Bullfinch, The Sisters, and The Baby, are so skillfully done, that a practiced eye would scarcely detect that they were not genuine oil paintings.

THE manufacture of knit goods, although a new branch of industry in this country, employs at the present time not less than 400 sets of machinery, and 40,000 hands, furnishing goods valued at $20,000,000 per year. One of the peculiarities of this branch of business lies in the fact that it furnishes remunerative employment to women at their own homes. In the manufacture of all-wool socks, for instance, the finishing of heels and toes is all done outside the wall, giving constant work for one hundred and five women for every set of machinery.

BREECH-LOADERS.—The British Secretary of State for War has invited proposals for breech-loading rifles, to replace the present service rifles. The various conditions of the arm are minutely specified. Rewards of £1,000, £600, £500 and £400 are offered for the best cartridge. If the rifle to which the first prize is awarded is adopted into the service it will bear the inventor's name. There will be a trial of the arms accepted for competition, and £300 will be paid to each accepted competitor.

PEAT.—A correspondent desires the views of other correspondents on peat, its properties, value as a fuel, best method of manufacture, etc. We give in this issue some facts in regard to its production, which will be followed by an article on its value, manufacture, and use. As to deciding on the best means or machinery for preparing it for the market, our advertising columns are open to the proprietors and makers of rival machines.

AN English statistician calculates that the annual earnings of the working classes in Great Britian and Ireland amount to £418,000,000, of which the laborers of England receive nearly three-fourths, those of Scotland one-tenth, those of Ireland two-thirteenths. Taking the average weekly wages, and assuming that there are two earners in each laborer's family, the income may be estimated in our money at $8 in England, $7 25 in Scotland, and $7 75 in Ireland, per week.

AT Lyons silk and linen goods are exhibited for sale having names and devices photographed upon them. The process is said to be easily and rapidly effected, and the picture is not at all injured by washing.

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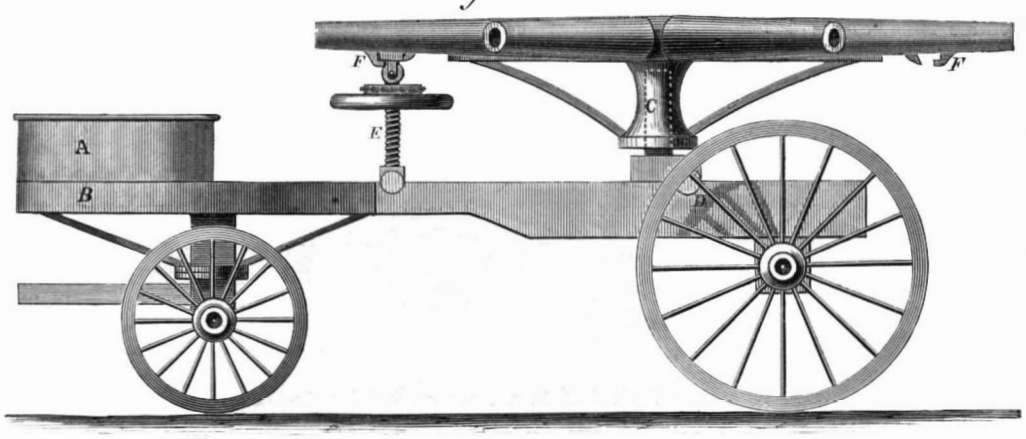
Improved Revolving Gun.

While the Gatling gun is a series of barrels clustered around a longitudinal axis, like the chambers of revolving pistols, other alterations in the build of combination guns have been made giving this species of weapon an entirely different character. The one represented in the engravings is a group of six barrels, the breech being a common center-block, and the muzzles radiating like the spokes of a wheel, the whole revolving in the same horizontal plane.

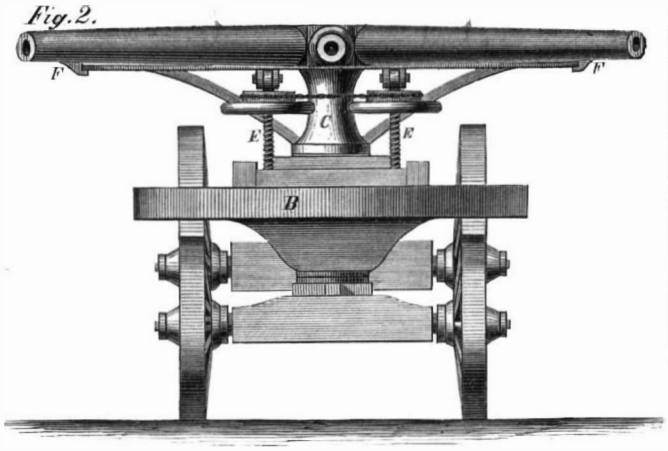
Fig. 1 is a vertical side elevation of the gun, carriage, and caisson, and Fig. 2 is an end elevation. The caisson, A, is semicircular, mounted on the platform in the rear of the gun, the platform here being circular, as seen at B. The barrels are loaded from this point. The guns are sustained on the block, C, which envelops an upright stud that is pivoted to the platform, at D, to allow for raising or depressing the muzzles. A semicircular rest receives the weight of the three rear barrels, and has two rollers which bear on the heads of the elevating screws, E, which are connected by a machine chain, so that operating one hand-wheel moves the other. The barrels have lugs, F, on their lower sides, which, when brought to the rear successively as the gun is rotated, engage with the semicircular rest and retain the barrel in line. The elevating screws are pivoted at their lower ends, securing always direct action on the weight of the gun, whatever the position of the barrels. The cooling of the barrels and the process of constant loading in action, which are claimed for this gun, would make it superior in these respects to some other devices for rapidly-firing arms.

Fig. 1



MILBURN'S PATENT REVOLVING GUN.

Fig. 2.



This device was patented through the Scientific American Patent Agency on Sept. 4, 1866, by N. L. Milburn, of St. Louis, Mo. Address as above for further information.

Exports of the World.

France exports wines, brandies, silks, fancy articles, jewelry, clocks, watches, paper, perfumery, and fancy goods generally.

Italy exports corn, oil, flax, wines, essence, dyestuffs, drugs, fine marble, soap, paintings, engravings, mosaics and salt.

Prussia exports linen, woolen, zinc, articles of iron, copper, and brass, indigo, wax, hams, musical instruments, tobacco, wines, and porcelain.

Germany exports wool, woolen goods, linens, rags, corn, timber, iron, lead, flax, hemp, wines, wax, tallow and cattle.

Austria exports minerals, raw and manufactured, silk thread, glass, grain, wax, tar, nut-gall, wines, honey, and mathematical instruments.

England exports woolen, glass, hardware, earthenware, cutlery, iron, metallic wares, salt, coal, watches, tin, silks and linens.

Russia exports tallow, flax, hemp, flour, iron, copper, linseed, lard, hides, wax, duck, cordage, bristles, fur, potash and tar.

Spain exports wine, brandy, oil, fresh and dried fruits, quicksilver, sulphur, salt, cork, saffron, anchovies, silks, and woolens.

China exports tea, rhubarb, musk, ginger, zinc, borax, silks, cassia, filagree works, ivory-ware, lacquered-ware and porcelain.

Turkey exports coffee, opium, silks, drugs, gums, dried fruits, tobacco, wines, camel's hair, carpets, camlets, shawls and morocco.

Hindostan exports silks, shawls, carpets, opium, saltpeter, pepper, gum, indigo, cinnamon, cochineal, diamonds, pearls and drugs.

Mexico exports gold and silver, cochineal, indigo, sarsaparilla, vanilla, jalap, fustic, campeachy wood, pimento, drugs and dyestuffs.

Brazil exports coffee, indigo, sugar, rice, hides, dried meats, tallow, gold, diamonds and other precious stones, gums, mahogany and india-rubber.

East Indies export cloves, nutmegs, mace, pepper, rice, indigo, gold dust, camphor, benzoin, sulphur, ivory, ratans, sandalwood, zinc, and nuts.

Switzerland exports cattle, cheese, butter, tallow, dried fruit, limes, silks, velvets, laces, jewelry, paper and gunpowder.

Japan exports tea, leather, silks, lacquered ware, gold, silver, and fancy ornaments,

West Indies export sugar, molasses, rum, tobacco, cigars, mahogany, dye-wood, coffee, pimento, fresh fruits and preserves, rubber, wax, ginger, and other spices.

United States export principally agricultural produce, cotton, tobacco, flour, provisions of all kinds, lumber, turpentine, the precious metals, whale oil, fish, wearing apparel, machinery, and many other manufactures.

Colors in their Relation to Artificial Light.

Never select colors in the evening, is an old maxim, whose value can be attested by many a disappointed purchaser, who, ignorant or disregarding this advice, and deeming himself the favored possessor of some tint of rare excellence, discovers on the return of daylight a color far from equalling his anticipations. The artist, overtaken by darkness, hastens to apply the last touches to some masterpiece, but the morning light reveals how poorly his intentions have been realized. The cause of this inconstancy is explained, and a remedy suggested, in a late article in the *Photographic News*.

From the spectral analysis, we learn that the flames of our lamps or gas lights contain sodium, which, in burning, yields a yellow flame, as strontium gives a red, and iridium a blue flame. Now when the color blue is illuminated by the yellow light it appears green, but if the flame strikes a color complementary to yellow it will appear white or black, according as the body has, or has not, the power of reflection; which is equivalent to saying that this flame alters the nature of colors, deepening the hues of some and extinguishing others.

Take a spirit lamp and put into it a piece of common salt, the wick will soon become saturated with sodium in solution, the flame, in consequence, will be yellow, and all colors will assume a monotonous white, black, or gray. It is only when this substance is in excess that we have the total extinction of colors, but a flame less rich will produce a partial extinction, and this is the reason why colors are at all visible by gas light. It may be asked, where does illuminating gas derive this sodium? From the coal, from the water with which the gas was washed; it comes also from matters employed in its purification, and probably even from the atmosphere.

The only hues which resist only slightly the yellow flame, are furnished by the blue; all the other colors are profoundly modified. Fortunately the flames which serve as sources of light are never saturated with sodium, hence the effects are greatly modified.

The light from the burning of magnesium alone brings out the various colors, both natural and artificial, in the same hues as they appear by day light. The services of chemistry render, then, to painting not only colors more or less rich, but also it has endowed it with a mode of lighting, whereby the painter may be able to work at night without incurring mistakes or illusions.

Producing Printing Surfaces by the Aid of Photography.

Mr. Winstanley, of Manchester, England, has secured a patent for an improved mode of producing printing surfaces by the aid of photography. The following description from his specification may prove interesting to our readers.

"In my process of printing by the aid of photography, lights and shades are represented by accumulation of dots, equal in number, but differing in magnitude, or equal in magnitude but differing in number. The method of producing the gradations in the former way I will now proceed to describe.

"It is well known in photography, that when a layer of bichromated gelatin, or other suitable material or mixture, is exposed in a proper manner under a negative photograph to the chemical action of light, its parts are rendered more or less insoluble in proportion to the extent in which they have been acted upon; those portions that have not been acted upon by light are dissolved out, and a relief picture is thereby obtained. According to my invention I take a framework of metal, filled with a number of short vertical wires having uniform conical ends, all held together and secured by suitable means.

"A photo-relievo having been obtained as above, the frame is placed upon the gelatin, and by a gentle vibration, the wires are pressed down on the uneven surface of the relief, and the whole is then secured in this position. By this means a reverse of such picture in a series of points is obtained.

"The back of the wires is now to be leveled, and from this surface, pictures in ink may be obtained precisely as in block printing. The resulting picture will possess gradations of tone or shade produced by dots of greater or less diameter, and will be positive and correct, or negative and reverse, according as an intaglio or relief was used in the former process."

In Illinois lately a number of horses grazing had their tongues bitten by the grasshoppers, making them so sore that the animals refused to eat, and died from starvation.

A dose of half a grain of bromide of cadmium dissolved in warm water, is a powerful emetic, three times more so than tartar-emetic, and twelve times more effective than sulphate of zinc.

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Correspondence

Practical Surgery in Cases of Accident.

MESSRS EDITORS:—I beg leave to call attention, through your columns, to a matter which, although not within your immediate province, must concern many of your readers. The utmost care and skill in the management of railroads, machine-shops, and factories, cannot always avert accidents, often so grave as to imperil or destroy life. Very often, however, these accidents prove fatal, or the subjects of them experience much suffering, because those who are on the spot and uninjured do not know of some simple measures to be taken at once, before regular surgical assistance can be had. Such cases occur within the observation of all hospital surgeons. I have seen many of them, and one which came under my notice last summer, and proved fatal, especially impressed me with the importance of preventing them, if it can be done. I have, therefore, prepared the following set of brief and simple directions in the plainest terms, as to the course to be pursued under such circumstances. The dangers to be feared in these cases are, shock or collapse, loss of blood, and unnecessary suffering in the moving of the patient.

In shock the injured person lies pale, faint, cold, sometimes insensible, with labored pulse and breathing.

Apply external warmth, by wrapping him up (not merely covering him over) in blankets, quilts, or extra clothes. Bottles of hot water, hot bricks (not too hot) may also be wrapped up in cloths and put to the armpits, along the sides, and between the feet, if they are uninjured.

If the patient has not been drinking, give brandy or whisky in tablespoonful doses every fifteen or twenty minutes—less frequently as he gets better. Food (strong soup is the best) should also be given now and then.

If the patient is not bleeding, do not apply any constriction to the limb, but cover the wounded part lightly with the softest rags to be had (linen is the best).

If there is bleeding do not try to stop it by binding up the wound. The current of blood to the part must be checked. To do this, find the artery, by its beating; lay a firm and even compress or pad (made of cloth, or rags, rolled up, or a round stone, or piece of wood, well wrapped), over the artery, tie a handkerchief around the limb and compress; put a bit of stick through the handkerchief, and twist the latter up until it is just tight enough to stop the bleeding; then put one end of the stick under the handkerchief to prevent untwisting.

The artery in the thigh runs along the inner side of the muscle in front near the bone. A little above the knee, it passes to the back of the bone. In injuries at, or above the knee, apply the compress high up, on the inner side of the thigh, with the knot on the outer side of the thigh. When the leg is injured below the knee, apply the compress at the back of the thigh, just above the knee, the knot in front.

The artery in the arm runs down the inner side of the large muscle in front, quite close to the bone; low down it gets further forward toward the bend of the elbow. It is most easily found and compressed a little above the middle.

Care should be taken to examine the limb from time to time, and to lessen the compression, if it becomes very cold, or purple; tighten up the handkerchief again if the bleeding begins afresh.

To transport a wounded person comfortably, make a soft and even bed for the injured part, of straw, folded blankets, quilts, or pillows, laid on a board, with side-pieces of board nailed on, where this can be done. If possible, let the patient be laid on a door, shutter, settee, or some firm support, properly covered. Have sufficient force to lift him steadily, and let those who bear him not keep step.

JOHN H. PACKARD, M. D.
1,415 Spruce street, Philadelphia.

[Dr. Packard has published the above rules with illustrations, which he furnishes at cost of publication.—EDS.

Preserving Meat.

MESSRS EDITORS:—In an article in one of your late papers speaking of "Three Processes of Preserving Meat," you mention Morgan's, Liebig's, and McCall and Sloper's, and leave it to be inferred that they are the only ones. I desire to state, and hope that you will make the correction, that Dr. N. B. Marsh, of Cincinnati, Ohio, obtained a patent for an "Improvement in Curing Flesh for Food," Nov. 30, 1858, by sending a strong solution of brine through the natural channels of circulation, thereby impregnating the whole animal at once with salt, removing the animal heat and salting him thoroughly.

Dr. Morgan's patent was obtained in England, in 1863, and he cannot, therefore, be considered the first inventor. Dr. Marsh's process has been and is now in successful operation in this country. I myself have salted a hog so thoroughly in eight minutes in warm weather that the hams and shoulders could be smoked at once, and have kept a long time exposed to the weather. WM. C. ALBERGER

Buffalo, N. Y., Nov. 15, 1866.

Soluble Glass.

MESSRS. EDITORS:—In your valuable paper of the 17th inst., you state that the silicates of soda and potash have been known for more than a century. I beg to differ with you in opinion. Although it is known that as early as 1640 it was observed by von Helmont that a compound consisting of quartz, sand, and a surplus of alkali was liquefied when exposed to the air, yet those definite combinations of silica with soda or potassa, which we call soluble glass, were not prepared until 1825; they were discovered by the German chemist Fuchs. There are four kinds of soluble glass:—1. The silicate of soda; 2. Silicate of potassa; 3. Silicate of soda and potassa, and 4. Soluble glass for fixing colors, mainly a combination with silica saturated double silicate. For the preparation of these various kinds of silicates, Fuchs has given the following prescription:—

Silicate of potassa, 45 parts quartz, 30 parts potassa, 3 parts charcoal. Silicate of soda, 45 quartz, 23 calcined soda, 3 charcoal, or 100 quartz, 60 calcined glauber salt, 15 charcoal. Double silicate, 100 quartz, 28 potassa, 22 soda, 6 charcoal. The ingredients here named are to be ground, thoroughly mixed, and then melted together, which operation is conducted best in a glass furnace; the melted mass is at last boiled in water and the thereby-obtained liquor forms the soluble glass. The last of the above named kinds is obtained by melting together 30 parts of calcined soda with 20 parts of quartz, and mixing the liquid obtained with silicate of potassa.

Soluble glass has since its discovery been proposed for quite a number of applications, both in industry and arts. Many of these, not being practical, have been abandoned, but its applicability for making inflammable bodies fire-proof, when coated or impregnated with it, is of real value; it may for this purpose previously be mixed with ground clay, chalk, blast-furnace slags, feldspar or other similar substances.

Soluble glass may also be mixed with colors, forming fire-proof paints. We hear that this manufacture is carried on by the "Atlantic Quartz Company," in West Philadelphia, on quite a large plan.

The soluble glass has also given birth to a new kind of fresco painting, named by Fuchs "stereochromy." In this kind of painting the soluble glass forms the ground and also the binding of the colors, which are really silicified with it, and stand, therefore, the atmospheric influences, which destroy so easily common frescoes. For stereochromic colors these are recommended: fine white, chrome green, cobalt green, chrome red, the American vermilion, iron minium, sulphide of cadmium, ultra marine, ocher, terra di sienna, and umber. Sulphide of mercury, the old vermilion, cannot be used, getting brown, and, finally, black, by exposure to light.

If wished, I shall give a full description of this interesting mode of painting in another issue.

ADOLPHUS OTT.

Philadelphia, Nov., 1866.

[We shall be pleased to receive the description mentioned by our correspondent—EDS.

The Usefulness of Salt.

MESSRS. EDITORS:—Salt is one of those substances which is not only in relation to mankind of the greatest influence, but decidedly necessary to life, both animal and vegetable. Without iron or coal we might live, but not without salt, the latter forming, in the composition of the blood, a necessary substance. Not only does it serve as a condiment to all our food, but also as a preservative. Meat, fish, vegetables and butter are kept through the use of salt from being spoiled, which thus enables sea-faring men and all those at a great distance from all sources of alimentary supplies, to enjoy the benefit of proper and wholesome food.

Farmers well know how beneficial salt is to cattle, and consequently mix it with their food. Neither can agriculture flourish without it, for the soil also requires a certain quantity to render it fertile. *Ut supra*, we find no end to the various uses of salt, and its extreme utility is apparent even to a child. But not less important we find its use in all branches of manufacture based on chemistry. For instance, in the preparation of hydrochloric acid, of chlorine, and of bleaching powder, of glauber salt, soda, sal ammoniac, and many other products. For the making of soap and glass, salt is indispensable. Besides this, it serves in tanning, the glazing of pottery ware, in extracting silver and copper from their ores, and for such purposes as the freezing of ice cream.

In fact, we are reminded everywhere and every day of the usefulness of salt. The linen we put on betrays in its snowy purity the chlorine bleaching performed by salt the shoes which we wear; needed salt for their tanning; for washing we hold in the soap we are about to use only another form of salt; the tumbler out of which we drink hides in its material the principal substance of salt. The copper kettle steaming on the fire is at different places soldered by borax, which is indirectly made from salt by soda; by the aid of salt our teaspoon obtained its whiteness, and so has all that highly esteemed metal on the table, being extracted from the mineral by salt. Silver, glass and crockery ware all needed it in their manufacture, and so did the cook in the preparation of breakfast. Did he put salt in the milk? No, but it contains chloride of sodium or salt. Breakfast over, we put on our spectacles to read the news; again the clear glass through which we see has its origin partly from salt, and the paper in our hands owes its whiteness to that wonderful element, chlorine of salt. The bell rings, a patient has come to solicit medical advice, we think, then write a prescription, and among ten medicines which come to our mind, at least five, either in their composition or the manner in which they are prepared, needed salt.

In fact, we scarcely can keep our thoughts away from that wonderful, in thousand-forms-appearing substance—salt. A. O.

AMERICAN INSTITUTE---POLYTECHNIC BRANCH.

Our reports of the last three meetings of this association, though duly prepared have not regularly appeared, owing to the press of other matter which has accumulated on our hands. In our contemplated enlargement on the opening year we shall find an agreeable relief for our now over-crowded columns. Prefaced with this explanation, we present a general resume of proceedings at the meetings refered to.

IMPROVED MODE OF OBTAINING OXYGEN.

A French patent has lately been issued for obtaining this gas by means of any metallic oxides or acids which form superoxidized compounds, and possess the power of giving off particles of oxygen, and on being heated of regaining the same. Any one of this class may be placed in a retort, and exposed to the action of steam, the oxygen given off is collected in a gas holder. When the gas ceases to be eliminated, the flow of steam is stopped, and the oxygen is again absorbed from the air to be driven off by a fresh supply of steam.

TO DETECT SULPHURIC ACID IN VINEGAR.

If into pure vinegar starch is introduced, then the adding of a minute portion of iodine will change its color to a blue tint; but if sulphuric acid is present, no such reaction will take place, for the resultant of starch in its presence is glucose, a substance not affected by iodine,

AVERY STEAM ENGINE.

The first engine ever built upon this plan was pre-

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sented to the institute for preservation. The principle by which motion is obtained is that of the well-known Barker mill. Two long and hollow metallic arms or vanes are hung so as to revolve in a vertical plane; steam enters by the axis and escapes through orifices at the ends of the arms; the reaction causes the vanes to revolve with great velocity.

BURGLAR-ALARM WHISTLE.

Prof. Vander Weyde, conducting a series of experiments on the management of the Argand gas burner, explained how by a simple contrivance the supply of air to the inner and outer flame can be regulated so that the maximum amount of light can be obtained at a great saving of gas, and thus this favorite burner may be economically employed. The alarm whistle, introduced in this connection, consists of a short metallic cylinder terminated in a tube of perforated zinc; this is to be placed between two gas burners, the upper one is lighted, and a small flame is kept burning as a night lamp. By a suitable connection, the opening of a door or window turns on a supply from the lower gas burner; this, mingling in its ascent with the air, forms an explosive mixture which, ignited, burns upon a piece of wire gauze placed in the tube, causing a low, shrill whistle.

This principle the Prof. had employed in building a small organ, but as each tube produced two notes, the effect was not pleasing, and the plan was abandoned.

BUNSEN BURNER.

The more light produced from a flame, the less heat, and *vice versa*. The white flame is used when artificial light is needed, but when we require from the same amount of gas, heat rather than light, we have a blue flame, as in the Bunsen burner.

When the temperature is raised to a white heat, the particles of carbon are entirely consumed, but in the blue flame portions of the carbon are driven off before they are burned; hence when the blue flame is seen escaping from the smoke pipe of a steamer, we may be assured that the fuel is not all utilized.

The report of the French Commissioners, published in 1852, showed that the greatest amount of light is obtained at the expense of twenty-seven per cent of carbon.

Concerning the relative heating power, it was stated that a given quantity of water, held one foot from the flame of a Bunsen burner, boiled in fifteen minutes, the other conditions being the same, and placed over a yellow flame, it required thirty-five minutes to boil. In a second series of experiments the flames were inclosed in a cylinder, and every precaution was taken to do away with radiation; the general result then showed a gain in heating power of one-half of the blue over the yellow flame.

PETROLEUM.

It is a singular fact that in boring for oil, the heaviest are first found, generally at a depth varying from eighty to one hundred feet, while the lighter petroleum is seldom reached at less than eight hundred or one thousand feet depth. The oils nearest the surface were undoubtedly once light, but by absorbing oxygen, their nature has been changed. Possibly to these deposits of oil earthquakes may be due. The vapors given off at great depths exert an immense pressure, as shown by the hight to which a column of oil is projected when an opening is artificially made. If for any reason spontaneous combustion takes place, this irresistible power opens a fissure through which the gases expend themselves.

Prof. Vander Weyde, in an explanation of the products of the distillation, stated that at a temperature of 70 deg. Fah., chimogene was given off; at 120 degs., rhigolene; at 170 degs., gasoline; at 250 deg., naphtha; at 300 degs., benzine; at 400 degs., light kerosene; at 500 degs., kerosene; at 600 deg., heavy kerosene, and at 700 degs., paraffine.

FOUR years ago, an agriculturist on the Isle of Man, planted a single grain of barley, producing the same year 300 grains. These were sown, and the second year's product was about half a pint, which were again sown, and yielded fourteen pounds, and on being sown again last spring realized this year seven bushels.

Notes and Queries

C. R., of ——.—To produce the imitation twist on gun barrels, stripe the barrel, when quite clean, with a varnish made of white wax, two oz.; Burgundy pitch and common black pitch one-half ounce each; melt and add gradually powdered asphaltum two ounces. Boil until well mixed, and dilute for use with spirits of turpentine. Apply it with a camel's hair pencil according to the pattern required. Then use a mixture of one part nitric, one part sulphuric acid, and two parts water. Wash the barrel with this and in a few hours the exposed parts will be etched sufficiently, when the resisting varnish can be removed with turpentine and the barrel, while warm, rubbed with beeswax.

R. H. S., of Mass.—Multiply the number of feet traveled by the piston per minute by the total pressure on the piston and divide by 33,000. This will give you, approximately, the nominal horse-power of the engine. Better get some manual on the steam engine, or on mechanics, and study.

W. P., of C. W.—Henry C. Baird, 406 Walnut st., Philadelphia, publishes the "Miller, Millwright and Engineer," which will probably give you the information you require. In No. 11, current volume, SCIENTIFIC AMERICAN, you will find a recipe for a millstone cement. . . . The power of engines is not tested by raising weights, but by calculating the pressure on the piston with its speed of motion.

H. C., of Ct.—By mixing some copperas with your whitewash, sufficient to give it a clear yellow hue, and applying it to the timbers in your cellar, you will stop the progress of the dry rot.

T. P., of Ind.—Sand is silicic acid, and lime is of an alkaline nature. The chemical change in common mortar (sand, lime, and water) consists in the union of the acid with the base. The change takes place slowly, but eventually the sand and lime combine, and the new product is silicate of lime. . . . The name kerosene is sometimes applied to petroleum oil, but it properly belongs only to coal oil.

T. J. F., of ——.—Oxygen is best prepared by heating in a glass, copper, or cast-iron vessel, a mixture of 2 parts of chlorate of potash and 1 part of oxide of manganese. The heat required is a low red heat, and the process needs only ordinary care.

J. V. C., of N. Y.—A gas jet burning in a stove gives out no more heat than if it were not confined. Why should it? If the steam of steam pipes and other heaters were let into the room, the air would be heated as much as in the present system. . . . The temperatures at which metals take fire, and the heat that their burning produces, vary greatly, and consequently your third question is indefinite.

H. W. S., of Ohio.—If you will read any treatise on the conversion of iron into steel or the manufacture of cast steel, you will readily see why remelting cast steel injures it. The reasons why, and *modus operandi* of working steel, are too lengthy to reproduce in our columns. You are mistaken in stating that lead, cast-iron, and other metals are not injured by remelting; if not *injured* they are greatly changed in quality.

P. F. M., of Md.—Best pale African copal gum, 2 lbs. Melt it in one pint of boiled linseed oil with heat. When cool, thin it with turpentine spirits three pints. The process is dangerous on account of its inflammability, unless you have proper apparatus and possess experience of manipulation. Better purchase your varnish from a reliable dealer.

A. K. P., of Pa., referring to a statement that a ball weighing 1,000 lbs. at the sea level would lose 2 lbs. of its weight at the top of a mountain four miles high, asks whether the ball has actually *lost* 2 lbs. by the subtraction of some of its atoms, or only *appears* to weigh less in consequence of the diminished density of the atmosphere; and whether the ball would weigh the same if detached from the earth's surface? The term weight means simply the pressure exerted by a given mass due to the force of gravity; hence it varies as gravity is increased or diminished. On top of the mountain, four miles high, in the paragraph referred to, this force of gravity would be so much less than at the sea level, that the weights as shown by the *spring balance* would be diminished two pounds. 1st. The ball actually loses in weight. The density of the atmosphere exercises no influence. 2d. If the ball could be suspended in the atmosphere at a like elevation, then its weight, i. e., the resistance to falling by the attraction of gravitation, would be the same.

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona-fide* acknowledgment of the reception of their funds.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

VIBRATING GOVERNOR.—ELSON TOWNS, Morland's Grove, Ill.—This invention has for its object to furnish an improved governor for regulating the velocity of machines driven by steam, wind, or water power.

OYSTER DREDGER.—WILLIAM BELBIN, Baltimore, Md.—Patented November 20, 1866.—This machine or apparatus consists of a bag formed by a number of iron rings linked together and attached to a rake-like device which gathers the oysters into the bag as it is drawn along the bottom of the river or creek The device is attached to a boat, and the present improvement has special reference to a novel and simple davit and lever arrangement, which greatly facilitates the boarding of the dredger when loaded with oysters.

BOTTLE STOPPER AND MEDICINE GAGE.—SAMUEL C. TIMMONS, Lafayette, Ind.—This improvement consists of a hollow stopper whose inside holds a certain quantity, or has graduations to indicate its capacity at given points. The stopper either slips into the mouth of the bottle or upon the neck thereof. It may be used to drink from, but is chiefly designed to constitute a convenient measure to avoid the discrepancy of spoons in taking medicine.

PEAT MACHINE.—THOMAS J. WELLS, New York City.—The object of this invention is to produce a simple and economical machine for breaking up, condensing, and preparing peat for fuel.

INDIA-RUBBER ROLLER.—CHARLES V. MEAD, Trenton, N. J.—This invention relates to a roller, the shaft of which is made in two or more sections, which are clamped together by wrapping through and around them cloth, wire, or other suitable material to which the rubber will readily adhere, in such a manner that a roller is obtained which is not liable to work loose from or turn on its shaft.

FAN BINDER.—ROSWELL T. SMITH, Nashua, N. H.—This invention relates to an instrument to be employed in the manufacture of paper or other fans; and consists in a simple and convenient arrangement for holding the sides of a fan for binding the edges.

CHURN.—E. H. BECKWITH, Westernville, N. Y.—This invention relates to the construction of a rotary vertical churn, and consists in the peculiar form and arrangement of the arms supporting the dashers or flutter wheels and their connections, and also of ribs placed on the bottom of the churn, by which the churn is rendered more efficient, cleanly, and convenient in its management.

MACHINE FOR CHANNELING STONE.—ANDREW T. MERRIMAN and THOMAS ROSS, Middlebury, Vt.—This invention consists principally in the combination of a steam boiler, or a steam cylinder, with a gang of cutters and a suitable feed mechanism, in such a manner that said cutters are operated by the direct application of the steam, and the machine is complete as a whole, ready to be put up in any desired locality, and to be operated independent of any other mechanism or apparatus.

CAR COUPLING.—H. L. OGDEN, Atkinson, Ill.—This invention consists of a circular link attached to an arbor which passes through the draw head, and a vertically sliding rod having a pin passing through it, and a chain or cord attached which passes around the arbor, the lower end of the rod being curved and bent upward and passing through the rear part of a sliding bar in the draw head, whereby the draw heads of two adjoining cars will couple or connect themselves as they come in contact, and also be capable of being disconnected or uncoupled by a very simple manipulation, and without the necessity of a person passing between the cars.

FISH HOOK AND TRAP.—JACOB KING, JR., Fort Wayne, Ind.—This invention consists in having a series of hooks arranged or applied to a tube, and connected with a rod and springs in such a manner that when the device is baited and set, and a fish or animal seizes the bait, the hooks will be freed and forced down by the spring, so as to catch or seize the fish or animal and hold it securely.

MILK STRAINER.—N. A. WRIGHT, Prairie du Chien, Wis.—This invention relates to an improved device for straining milk or other liquids, and consists in a detached spout made with a rubber or other yielding lining to fit close around the edge of a pail or bucket, to which it may be attached by means of springs which are slipped readily over the side of the pail, and press the lining against it while the milk is poured out and strained.

SMOKE FURNACE.—JOHN I. BARINGER, Germantown, N. Y.—This invention has for its object to furnish an improved smoke furnace for smoking meat, fish, etc., by the use of which all danger from fire may be avoided.

BRAN DUSTER.—GEORGE H. REYNOLDS, Peoria, Ill.—This invention has for its object to furnish an improved apparatus by means of which the flour adhering to the bran may be readily and thoroughly separated therefrom.

CLEANER FOR LAMP CHIMNEYS, BOTTLES, ETC.—F. ASHLEY, New York City.—This invention consists in so securing the sponge or other pad used in lamp-chimney cleaners to their holders that it can be attached and detached at pleasure, thus enabling one material to be substituted for another, or the materials used to be washed or cleansed when so desired, and again used.

SPIRAL HAY FORK.—HENRY NEUMEYER, Millerstown, Pa.—This invention has for its object to furnish an improved hay fork, simple in construction, easily operated, and effective in its operation.

PULLEY.—JONATHAN S. TIBBETTS, Terra Haute, Ind.—This invention has for its object to furnish an improved means for fastening clothes lines and for other purposes.

FIRE-PROOF BUILDING.—CHARLES ALDEN, Newburgh, N. Y.—Patented October 30, 1866.—This building is of brick and iron, and its peculiarity consists in its being composed of a series of air tight compartments, separated from each other by two walls, between which is an air space. There is also a space between the ceiling of each compartment and the floor of the compartment above it, which space is filled with a non-conductor of heat. A pipe leads into each compartment from a main, and by this means any of the compartments may be filled with either air, water, or steam, almost instantaneously. In each compartment is placed an electric fire alarm, so adjusted as to make known in any desired part of the building the existence of any undue degree of heat in either of the compartments. It is a well-known fact that fire cannot exist without air, and that steam is an efficient agent in extinguishing fires. Should a fire occur while the door of a compartment is open, it will, by means of the fire alarm, be made known immediately to those in charge of the building; and fire in one compartment can work no damage to any other compartment, as they are entirely separate and independent of each other. We understand that grounds have been secured, and arrangements are being made by capitalists, to build an extentive warehouse on the plans embraced in Mr. Alden's patent, and there can be hardly a doubt that this must work an entire revolution in the manner of constructing buildings for storing

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merchandise. The saving in the item of insurance alone, it is claimed, would in a short time pay the cost of a building. The necessity for buildings proof against internal as well as external fires is admitted by every one interested in the welfare of our city.

MEDICAL COMPOUND.—GEORGE H. BAUGH, Oskaloosa, Iowa.—Patented November 20, 1866.—This compound is for the cure of hogs when attacked with the disease known as hog cholera, and when given in full doses effects a speedy and radical cure. Occasional small doses, when the animals are in apparent health, will prevent attacks.

GRAIN DRILL.—ELIJAH WAGONER, Westminster, Md.—Patented November 20, 1866.—This invention relates to the class of drills in which a spring is employed to restore the drill to its operating position when thrown backward by an immovable obstacle. In this case, however, the drill will not yield till a maximum amount of resistance is offered, and hence, under ordinary circumstances, the drill does not vibrate or yield, but is held firmly to its work.

FLUTING MACHINE.—MRS. SUSAN R. KNOX, New York City.—Patented November 20, 1866.—This invention relates to a machine for fluting ruffles, and the improvement provides means whereby the operation is conducted and the rollers changed with a degree of convenience and facility not hitherto attained in machines of this class.

BINDER FOR SEWING MACHINES.—GEORGE VINCENT, Stockton, Cal.—This invention relates to an improvement in binders for sewing machines, and consists of a plate of metal with openings, through which moves a plate so arranged as to form a gage which can be regulated to suit any width of binding, while a curve in the plate serves as a guide to the lower edge of the binding.

DOOR BELL AND BURGLAR ALARM.—D. L. COLLINS, Antwerp, N. Y.—This invention consists in a novel arrangement of devices, whereby one and the same bell may not only be used for the ordinary purposes of a door bell, but at night also made to answer as a burglar alarm.

PAINT BRUSH.—JOHN MARCHBANK, Lansingburgh, N. Y.—This invention consists in securing the bristles of a brush to its handle by using a ferrule of an enlarged shape between its two ends.

GANG PLOW.—D. BEQUERET and E. DUMOULIN, Jamestown, Ill.—This invention relates to a gang plow of that class in which two or more plowshares are employed, which are adjustable up and down by hand levers from the driver's seat.

FARM GATE.—LAFAYETTE F. TERRY, Port Gibson, N. Y.—This invention relates particularly to the manner of hanging a gate, made to slide upon a roller arranged between the rear posts, so that it can quickly be entirely removed from the fence in winter time, when snow might clog it, or at any time when it is not requisite to have the gateway closed.

CHEMICAL LIGHTING COMPOUND.—CHARLES J. M. SOHET and HENRI C. T. MOLVAUT, New York City.—This powder is intended to be a tobacco lighter, which, by its simple contact with or application to the tobacco, will ignite it instantly without flame.

DISTRIBUTING TABLE.—GEORGE WHITAKER, Lewistown, Ill.—This invention consists in constructing the table of a box form, and with a series of boxes or spouts along its sides or edges, whether one or more, made with a hopper at their upper ends, and at their lower ends provided with hooks or other suitable means for hanging upon them a bag or sack, or other receptacle, to receive and hold the mail or other matter which may be thrown into them.

TREADLE.—A. P. TORRENCE, Columbus, Ga.—This invention relates to the hanging and arranging of treadles to sewing and other machines, whereby in operating the treadle, in lieu of the smaller and weaker mucles of the foot and ankle of the person being called into action, it is transferred to the larger and more powerful muscles of the thigh and leg, thereby enabling a much greater amount of force to be exerted upon the treadle, and with less fatigue to the operator, than by the ordinary and usual mode of hanging treadles,

RAILROAD SPITTOON.—AMBROSE H. WELLS, Waterbury, Ct.—This spittoon is so constructed that when opened upon the inside of the car, its discharge orifice upon the outside will be then closed, and vice versa, thereby preventing any draft of air up through the spittoon to the interior of the car.

PUMP.—WILLIAM P. SQUIRE, Paris, Ill.—This invention consists in a novel construction of a pump, whereby many advantages are obtained.

HARNESS REINS.—REV. WILLIAM CLARK, Valatie, N. Y.—This invention relates to that class of harness reins which are passed through the bit and gag rings, and thence to the check hook, and it consists in so combining with such reins a stop as to regulate the amount to which the horse may be checked by drawing or pulling upon the reins, while, at the same time, it will not interfere with the freedom with which horses, having such a system of harness and check reins, can lower their heads to drink, etc.

ELECTRO-MAGNETIC CAR BRAKE—F. F. A. ACHARD, Paris, France.—The object of this invention is to use the force which is developed by the rotation of the wheels for putting on the brakes, and particularly to apply two sets of electro-magnets in combination with the mechanism for transmitting the power from the axle of the wheels to the brakes, in such a manner that by closing the circuit through one set of electro-magnets, the brakes are applied, and by closing the circuit through the other set the brakes are taken off.

MACHINE FOR PEELING GRAIN.—FR. HENKEL and WM. SECK, Munich, Bavaria.—The object of this invention is to remove the peel from grain by the centrifugal force, said peel, which consists of fibrous and silicious material, being of no value for nutriment.

BALANCE SLIDE VALVE.—JOHN LOCKHEAD, San Francisco, Cal.—This invention consists in a metal ring fitted into an opening in the valve, and made of such a shape that said ring is kept up tight against the inner surface of the steam chest cover by the pressure of the steam alone, and without the aid of springs or other mechanical means.

HAND SCREW.—WILLIAM ORMSBY, Boston, Mass.—This invention has for its object to furnish an improved hand screw, so constructed and arranged that the jaws may be set at any required distance apart easily and quickly.

FLOUR PACKER.—LEWIS W. TEETER, Hagerstown, Ind.—This invention has for its object to furnish an improved flour packer, by means of which flour may be packed more evenly than it can be with the packers now in use.

POCKET MATCH SAFE.—CHARLES E. FOWLER, Carmel, N. Y.—This invention has for its object to furnish a match safe, so constructed that it may be readily opened and the matches removed therefrom, and that when closed, the part upon which the matches are rubbed to ignite them may be covered to prevent the clothing from being impregnated by the odor developed by igniting the matches.

FIRE ANNIHILATOR.—JAMES R. LAURENT, Milford, Pa.—This fire annihilator belongs to that class in which water or other liquid is thrown out through a suitable hose or nozzle by the force of gas generated in a vessel which also incloses the water or other liquid used in extinguishing the fire.

WATER WHEEL.—J. L. RUMRILL, Hartford, Vt.—This invention relates to the cylinder of a water wheel which may be adjusted inside the wheel, and brought to a suitable or proper bearing so that it will not leak, and so that it may be tightened as it wears and becomes loose.

COTTON PRESS.—C. E. MCNEIL, Lynchburg, Va.—This invention has for its object the pressing of cotton into bales by hydraulic pressure, and consists in making two hydraulic presses and working them in conjunction with each other or separately as may be desired.

MACHINE FOR ORNAMENTING MOLDING.—J. W. CAMPBELL, New York City.—The object of this invention is to construct a machine by which ornaments of whatever description may be applied to and pressed upon moldings used for various purposes, or by which the said ornaments may also be cast in independent strips.

COMBINED DIE PLATE AND WRENCH.—J. A. SMITH, New York City.—The object of my invention is to combine a die plate supplied with a number of dies for cutting screw threads upon bolts, and at the same time have a wrench, the jaws of which may be moved or made to approach and recede from each other, for the purpose of bringing it to the capacity of different sized nuts, thus combining the two tools in one without making them cumbersome.

PRESS.—J. V. C. CRATE, Waterbury, Conn.—The object of this invention is to compensate for the var ation in the thickness of the articles to be operated upon, so that in case a thicker piece of metal than usual is inserted under the punch or die attached to the reciprocating rod or shaft, the machine will not be strained or injured in any way by a restriction of the full throw of the crank or eccentric—a contingency of frequent occurence in using the ordinary presses.

BOOT TREE.—WILLIAM and A. G. KELSEY, Delaware, Wis.—This invention consists in a new and improved construction of a boot tree, which renders it more convenient and powerful for general use in stretching, shaping, and finishing boots.

WAGON BRAKE.—I. GROSS and I. M. GROSS, New Galena, Pa.—This invention consists in a novel application of a brake to a wagon, whereby the brake is rendered capable of being operated in three different ways, to wit, from the driver's seat on the wagon, where the driver is riding; at the rear of the wagon when the driver is walking behind it, or at the side of the wagon when the driver is walking by the side of it.

SEALING OR CEMENTING CANS.—J. M. BRUCE, Wilkins, Pa.—This invention relates to a useful device for sealing or cementing cans, designed more especially for sealing or cementing fruit cans.

WIND WHEEL.—J. E. FAY, New York City.—This invention consists of two vertical wheels inclosed within a case having a vane attached to keep the front of the case facing the wind, the wheels being connected with each other, and to a shaft from which the power is taken by gears, and the front end of the case provided with doors which are connected with a regulator, whereby it is believed that a simple, economical and efficient wind wheel is obtained.

FURNACE FOR HEATING SOLDERING IRONS.—R. BRADY, New York City.—This invention consists in providing a chamber to receive the soldering irons, while being heated, which opens at one end but is closed upon all its other sides, and is so constructed as to prevent the outward radiation of heat, produced in it by gas flames or other heating medium employed.

BALING PRESS.—C. W. GILLIS, San Antonia, Texas.—This invention relates to a new and improved press for compressing cotton, hay, and other substances for baling, and it consists in a novel manner of applying power to the follower or plunger, and in a novel manner of securing and arranging the doors, whereby a very simple and efficient press for the purpose specified is obtained.

CIDER PRESS.—THOMAS APPLEGET, Princeton, N. J.—This invention relates to a new and improved cider press of that class in which endless pressure belts are employed, and it consists in having the belts constructed of plates of metal or other rigid material connected together by hinges and operated by gears and racks attached to one of the belts, whereby the ground apples are subjected to a degree of pressure sufficient to express all the juice from them. The canvas belts hitherto employed for this purpose have proved inefficient on account of their flexibility and the difficulty in operating them by mere tension only, difficulties which, it is believed, are fully obviated by this invention.

GANG PLOW.—PETER MERKEL, St. Louis, Mo.—This invention relates to an arrangement of the plow beams whereby the plows may, with the greatest facility, be adjusted higher or lower according to the depth of furrow required, and also readily elevated above the ground when not required to work, as, for instance, in turning at the ends of a field or in drawing the machine from place to place; the invention at the same time admitting of the side wheel which runs on the land or unplowed surface being adjusted higher or lower, as occasion may require.

CIDER MILL.—WILLIAM SHAW, New Gerdon, Ohio.—This invention consists in the employment of an endless apron, pressure rollers, grinding cylinder, scrapers, and a rotary brush, whereby apples may be crushed and the juice expressed from them at one operation with but a moderate expenditure of power and by a very simple arrangement of parts.

BRICK MACHINE.—E. R. GARD, Chicago, Ill.—This invention consists in the application of hooks and anti-friction rollers to the followers, in connection with lateral projections on the way or track, whereby the followers are raised and lowered in the molds by a positive movement, and the proper operation of the followers insured. The invention also relates to an improved means for striking the molds, removing the surplus clay therefrom, whereby that work is performed in a perfect manner, and the striking plates allowed, in case of any foreign substance being in the molds, to become detached or free themselves so as to prevent the straining or breaking of any of the working parts of the machine.

HATS AND BONNETS.—EDWIN COPLESTON, Wrentham, Mass.—This invention relates to an improved method of manufacturing hats and bonnets, and consists in making the hat and bonnet by flocking upon a foundation or body formed of buckram or other suitable fabric which is pressed into the desired shape with hot dies, by which means an elastic and durable article of any desired color is produced, much cheaper and more beautiful than hats or bonnets made of felt.

SEEDER, HARROW, AND ROLLER.—C. A. FAIRCHILD, Independence, Iowa.—The nature of this invention consists in combining a field roller and reciprocating harrow with a seeding machine in such a manner that each machine performs its functions in the most perfect manner.

SEEDING MACHINE.—J. D. FIELD, Keokuk, Iowa.—This device is designed to plant and cover corn in check rows after the ground has been marked off one way, the device also admitting when desired, of a fertilizer being sown previous to the seed being planted.

APPLE-PARING MACHINE.—HORATIO KEYES, Terre Haute, Ind.—This invention relates to mechanism of apple-paring machines whereby they are made double acting and capable of paring apples much faster than ordinary machines, The operation is such that the paring knife having passed from the back to the front of the apple holder and thus pared one apple, is thrown down out of the way so that the pared apple can be removed and another put on the fork in its place, to be pared on the return movement of the knife to its first position.

FRUIT CAN.—GARRET WILLIAMS, Spring Hills, Ohio.—This invention relates to metal cans of that class in which fruit or other articles are preserved, to which no air should be admitted, and it has for its object the construction of a cap and the arrangement for securing the same to such a can in such a manner that no air can pass in when the cover is closed, that it may easily be opened and reclosed, and be of a very simple and cheap construction.

HAY DERRICK.—W. P. SQUIRE, Paris, Ill.—This invention has for its object to furnish an improved derrick, so constructed and arranged that the hay may be raised and carried forward, and fat the same time swing to the right or left for the purpose of placing it upon a stack or depositing it in a barn, as may be required.

Inventions Patented in England by Americans.

Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

2,261.—NEW METHOD FOR DETACHING BOATS FROM THEIR DAVITS.—Thomas Huntington, New York City. Sept. 3, 1866.

2,422.—FABRIC FOR THE MANUFACTURE OF DRIVING BELTS, HOSE, AND OTHER USEFUL PURPOSES.—Thomas R. White and William G. Bedford, Philadelphia. Sept. 21, 1866.

2,426.—SECURING TEETH IN SAWS.—American Saw Company, New York City. Sept. 21, 1866.

2,430.—CONSTRUCTION OF WEIGHTS.—Daniel B. and Isaac A. Lacy, Mott Haven, N. Y., and Thomas T. Lacy, Jersey City, N. J. Sept. 21, 1866.

2,436.—MANUFACTURE OF BRUSHES.—Florence Manufacturing Company, Florence, Mass. Sept. 22, 1866.

2,456.—APPARATUS FOR STEERING VESSELS.—Robert Creuzbaur, New York City. Sept. 24, 1866.

2,466.—IMPROVEMENT IN STEAM ENGINES, APPLICABLE ALSO TO PUMPS, AND OTHER APPARATUS IN WHICH PISTONS OR PLUNGERS ARE USED.—John B. Root, New York City. Sept. 25, 1866.

2,468.—CORNETS, AND OTHER SIMILAR MUSICAL INSTRUMENTS.—Schreiber Cornet Manufacturing Company, New York City. Sept. 25, 1866.

2,496.—PROCESS OF DISTILLING PETROLEUM AND OTHER OILS.—Orazio Lugo and Theodore O. L. Shrader, New York City. Sept. 27, 1866.

2,500.—POWER LOOM.—Erastus B. Bigelow, Boston. Sept. 27, 1866.

2,509.—RAILWAY SWITCH.—Benjamin Shiverick and Thomas L. Calkins, Philadelphia. Sept. 28, 1866.

2,559.—GRATE BARS.—Samuel Harrison, Philadelphia. Oct. 4, 1866.

2,561.—MODE OF FORMING COLLARS ON METALLIC AXLES AND OTHER ARTICLES. William Allen, Auburn, N. Y. Oct. 4, 1866.

5,565.—ANCHOR.—Denison C. Pierce, Clayton, N. Y. Oct. 5, 1866.

2,646.—DETECTING APPARATUS FOR REGISTERING THE TIME OF WATCHMEN, MECHANICS, AND OTHER EMPLOYES.—Jacob E. Buerk, Boston, Mass. Oct. 12, 1866.

1,880.—SEWING MACHINE.—Albin Warth, Stapleton, N. Y., and Eberhard Faber, New York City. July 19th.

2,197.—FRICTION CLUTCH FOR STARTING AND STOPPING MACHINERY.—James Brown, Pawtucket, R. I. Aug. 25th.

2,535.—COTTON-BALE TIE.—Charles W. Wailey, New Orleans, La. Oct. 3.

2,610.—SEWING MACHINE.—Thomas A. Macauley, New York City. Oct. 9, 1866.

2,655.—TIRES FOR CARRIAGE WHEELS.—Smith Collins, New Haven, Conn. Oct. 13.

2,673.—STEAM BOILER.—Henry Feyh and George T. Emery, Columbus, Ohio. Oct. 16.

2,677.—STAMPS, HAMMERS, ETC.—Christopher R. James and Nathan W. Condict, Jr., both of Jersey City, N. J. Oct. 17.

2,685.—PROCESS OF DISTILLING PETROLEUM, ETC.—Orazio Lugo and Theodore O. L. Schrader, New York City. Oct. 17.

2,707.—PROCESS FOR THE PREPARATION OF INDIA-RUBBER, ETC.—Edwin L. Simpson, Bridgeport, Ct. Oct. 19.

2,759.—GAS MANUFACTURE, ETC.—William Elmer, M.D., New York City. Oct. 25.

2,810.—PREPARATION OF GALVANIZED IRON.—Charles H. Perkins, Rhode Island. Oct. 30.

2,811.—BOOTS AND SHOES.—Lyman Daggett, Massachusetts. Oct. 30.

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Drill Rest for Grinding.

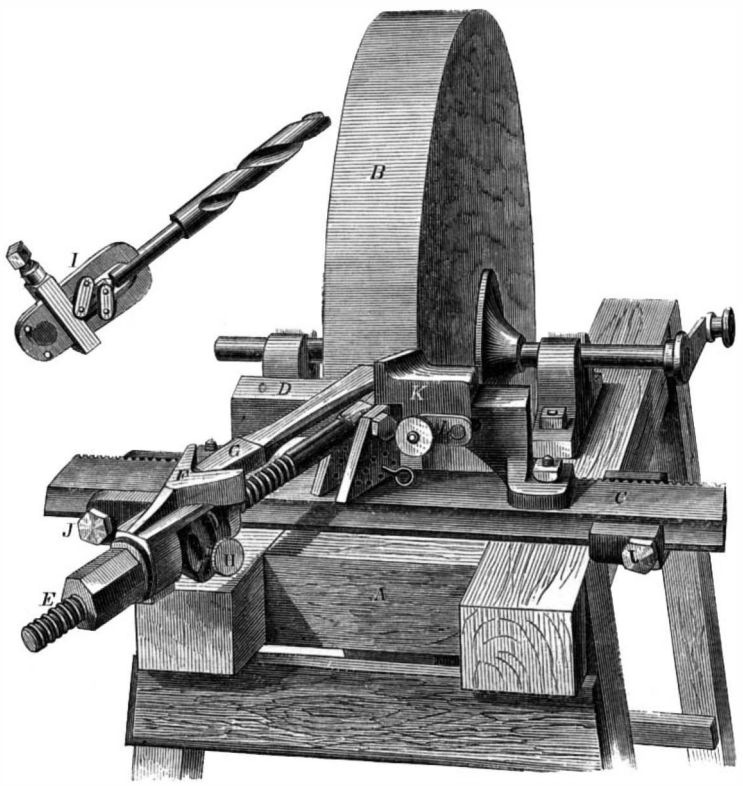
Machinists, and iron workers generally, understand the great difficulty in grinding a drill so that both the side angles of the cut are equal. It is necessary, often, after gaging the sides, to test the drill by boring a hole. If the point formed by the angles is on one side, or in the least out of the center, the drill will form a larger hole than its diameter. It is especially difficult to grind a twist drill true. The device herewith illustrated is one of the neatest and most efficient arrangements we have ever seen for the purpose of obviating these difficulties. With it the greenest hand in a shop can, with certainty, grind a drill to a true and perfect point.

A is the grindstone frame, and B the stone. Across the frame is placed the platform, C, of cast iron, carrying the rest, D. Extending from this rest, at the proper angle, is a pivoted screw, E, carrying a sliding thrust-block, F, which is driven forward by the nut.

The operation is simple. The drill, G, is placed on the rest, the heel in the thrust-block, F, and the point resting on D. Turn the nut gradually, thus forcing the drill against the stone until you have a good edge on one angle of the drill. Then set the stopper by the thumb-screw, H, and recede the nut. Turn the drill over and proceed as before, gradually pressing the drill forward by means of the nut. When the thrust-block is arrested by the stopper, the grinding of the drill is completed. For grinding a twist drill, a convenient little vise, having a center always coincident with the jaws, is provided. It is seen at I.

The inclination, vertically, of the pivoted screw, E, is determined by means of a projection formed on the pivoted end, which is held in any position by the pin which passes through holes in the jaw. The apparatus can be put on or taken off the grindstone frame in a moment, by means of the jaws and screws, J, at the ends. The jaws have wedge-like projections on the under side, which engage with the wood of the frame and hold the device rigidly. The guide block, K, is readily removed by lifting the catch, L, when the rest becomes an ordinary one.

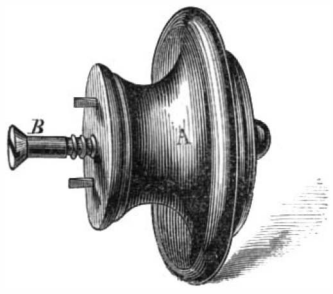
This arrangement was patented Oct. 2, 1866, by W. H. Strahan. For further information address Merrick & Sons, manufacturers, 430 Washington avenue, Philadelphia, Pa.



STRAHAN'S DRILL REST FOR GRINDING.

MYER'S DRAWER KNOB.

In old-fashioned times the ornaments of a chest-of-drawers, or bureau, were of metal and of the most elegant and solid description. Knobs for opening drawers were unknown, but swing handles, solidly secured to the wood, were for that use as well as for ornament. The convenience of knobs, the modern



device, suffers some detraction from their liability to break off, or unscrew and become loose. To prevent this latter occurrence is the object of the improvement herewith illustrated.

A is a knob of the usual form, having, instead of the wooden screw on its inner face, a plane surface, The common wood screw, B, is used to attach it to the drawer or door while the two sharp pins, one on either side of the screw, secure it in position. It is easy enough to see that these pins effectually prevent the removal of the knob from the outside by unscrewing.

Patented through the Scientific American Patent Agency Oct. 30, 1866, by Dr. L. B. Myers, whom address for further information at Elmore, Ohio.

The attention of furniture dealers to the above is particularly requested by Dr. Myers.

Shot Guns.

A. Cokins, of Lamartine, Wis., says that the device of S. M. Blake to concentrate the charge of a shot gun, published in our issue of Oct. 27th, is a good one. He, however, offers an improvement on the plan proposed in that article of placing a film of solder on the inside of the muzzle. He reams out the barrel from the breech about the thickness of two sheets of paper to within two inches of the muzzle, then reams from the muzzle about one-half as much, leaving a space of one-quarter of an inch the original size of the bore between the two reamings. He says with such a gun he does not care to get nearer than fifteen rods for ducks or smaller game, and has driven No. 6 shot through an inch board in a mass at that distance, making a hole like that made by a ball.

REHORN'S PATENT SADIRON.

The object of this neat improvement will be appreciated by every housewife and laundry woman. Ironing day has almost as many vexations as the traditional "blue Monday." There are scorched fin-

gers, flushed faces, and the annoyances of hot handles and clumsy holders to protect the hands. This handle, however, is movable, detached when the iron is to be heated, and firmly secured when in use.

The frame, A, of the handle is cast in one piece, the uprights connected at the bottom and also the top. The wooden handle, B, is turned and then grooved to fit the upper cross piece, to which it is secured by pins. To the handle frame a guard, C, if attached, lined on the inside with a sheet of non-conducting substance to prevent the radiation of the heat.

On the iron proper are lugs, D, which form an inclined dovetailed recess to receive the base of the handle frame. This is slipped in from the rear of the iron, and when in place is secured by the swing catch, E, which engages with a lug and holds the handle firmly to the iron without shaking. The catch is readily operated with the thumb of the hand that grasps the handle. The device appears to be simple, handy, and not liable to get out of order.

A patent was secured through the Scientific American Patent Agency, Sept. 25, 1866. For additional information address the patentee, Frederick Rehorn, 179 East 58th street, New York City.

THE GREAT IRON BELT.

The steady and rapid progress of the great continental railroad is encouraging to every lover of the country and believer in the civilizing influences of internal improvements, especially facile intercommunication.—From Omaha, on the Missouri, about fifteen miles above the mouth of the Platte, the road runs nine miles southwardly to reach the Platte valley. Then turning to the west it follows the course of the Platte on its northern bank for three hundred miles, when it crosses the river at a point about forty miles from the junction of the north and south fork of the Platte, and follows the latter, on its north bank, to a point near Denver, in Colorado, at the foot of the Rocky Mountains. The pass through the mountains will probably be at a point about seventy-five miles north of Denver, as it is the only point where the construction of a tunnel will not be necessary.

Already the trains are run over about two hundred and fifty miles of the road, west of Omaha, to Cottonwood, from which the stage route begins, which is forty-eight hours to Denver city. Before the winter fairly sets in it is expected this staging will be reduced to thirty-six hours. From Denver city the stage route extends to Salt Lake city and California.

On this side of Omaha, the route is by way of the Northwestern railroad to Chicago, thence to New York, 1,958 miles, in seventy-five hours. The progress of the road has been, during the summer, at the rate of about two miles per day. It is probably, considering its length, the straightest road on the continent. Its completion will not only develop the vast mining interests of the Great West, but its agricultural resources, so that in a few years we may expect that hitherto almost untrodden wilderness to bud and blossom like the rose.

Public Works in Holland.

The Dutch Government, with a view to unite the network of railways with the islands of Walcheren and Zind Beveland, as well as the port of Flushing, have undertaken to close, by means of a viaduct, the eastern arm of the Scheldt. It flows entirely in Dutch territory, and being of little depth, is only frequented by small coasting vessels. At the same time the Cabinet of the Hague, by a stipulation in the Treaty of 1839, are obliged to leave open for navigation the waters between the Scheldt and Rhine; it now offers to make a new route between those two rivers by means of a large canal just constructed in the island of Zind Beveland, and thus the two arms of the Scheldt are in communication with each other below the dam. This canal is ten kilometers in length, and is provided with two locks, and is to be free from any toll.

To ARCHITECTS.—An advertisement appears in this number offering premiums for the best designs for the new building to be erected for the use of the War Department. Plans offered in competition must be sent on or before the 1st of February next.

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NEW YORK, SATURDAY, DEC. 1, 1866.

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IMPORTANT TO ADVERTISERS.

With the enlargement of the SCIENTIFIC AMERICAN on the 1st of January next, it is our purpose to issue an edition of about fifty thousand copies of the first number of the new volume. We intend also to devote a portion of the back outside page to advertisements, for which seventy-five cents per line will be charged. Those who may wish to avail themselves of this rare opportunity to publish their advertisements will do well to correspond with the publishers as early as possible. We can admit but few. First come first served.

"A VERY EMINENT OFFICER OF THE UNITED STATES NAVY" ON IRON-CLADS.

A communication copied from the New York *Army and Navy Journal*, on "American Monitors and Foreign Iron-Clads," is going the rounds of the English engineering journals.

From the article in question we get some singular statements, when compared with official reports made by a high authority; that of Vice Admiral D. D. Porter, U. S. N., who, like the writer of the article, "had, during the Rebellion, some little experience, and knows exactly what monitors are capable of enduring." That a United States naval officer should publish to the world, through American and English papers, his opinion that our best war ships are failures, is, to say the least, unofficer-like, and a remarkable exhibition of patriotism. His duty should require him to report to his department, if the nature of his experimental investigations or the value of his opinions entitled him to attention; and if no consequent action was taken, he had no right to give the world at large the benefits of his knowledge, or of his doubts. These remarks are as applicable to a Vice-Admiral as to any "middy" in the navy. In his report to the Secretary of the Navy made Feb. 16, 1864, Vice-Admiral Porter says of the Western monitors:—

"I can only draw comparison between these and the first Ericsson *Monitor*. . . I remember pronouncing that vessel a perfect success, and capable of defeating anything that then floated. . . The results have justified me in forming a high estimate of the monitor principle."

Speaking of the *Benton*, the best broadside iron-clad on the Mississippi, he says: "The heaviest and best vessel we have, the *Benton*, would stand a poor chance against the monitor alluded to." And replying to some popular attacks on them, "I think too much has been expected of monitors heretofore, and the fact that two or three of them were not able to overcome obstacles formidable enough to keep out a large fleet of three-deckers, has, in a measure, weakened the confidence of the public (who generally know little or nothing of such matters) in them." Referring to the Mississippi broadside iron-clads, "Still they were very deficient in one respect, as they were very vulnerable, suffered a good deal, and proved that in the end the monitor principle, from its invulnerability, was the only thing that could be safely depended on. For this reason, I often wished that I had been provided with one good monitor, with which at certain times, I could have accomplished more than with a fleet of such boats as we have here." Again, "Two of these have been tried under batteries, and the *Indianola* in battle, against vessels, and have shown that the monitor principle, only, is the right one." And further; "The *Cincinnati* was sunk, when my own judgment told me it was wrong to place her where I was called upon to order her to." "With a single monitor, results would have been very different; and on that day instead of having a vessel sunk, the right wing of our army would have gained a position commanding the most important works in and about Vicksburg."

A year passed by, and either through impulse or reason, the Admiral is still further convinced that the iron-clad that gives the maximum thickness of armor with a given displacement, and can handle any size of cannon which can be made, is the solution of the problem. For, in his report of Jan. 15, 1865, on the performance ot the monitors in the attack on Fort Fisher—the last battle in which they were engaged—we find the following:—

"The *Monadnock* is capable of crossing the ocean alone (when her compasses are once properly adjusted), and could destroy any vessel in the French or British navy, lay their towns under contribution, and return again (provided she could pick up coal), without fear of being followed." And a writer in the *Army and Navy Journal* logically observes:—

Fortunately, the nation possesses four monitors of the *Monadnock* class—the *Miantonomoh*, which has created such a sensation in Europe, being one of this class. There are still stronger grounds for congratulating the nation. It possesses, beside the *Dictator* and *Puritan*, four double-turreted monitors of the *Kalamazoo* class, each twice as large, in point of capacity, as the *Monadnock*, being 345 feet long, 56 feet beam, and drawing 17 feet of water, with 6,000 tuns displacement, and provided with much greater engine power. But, what is far more important, the *Kalamazoo* and her sister ships have turrets of the *Dictator* pattern, 15 inches thick, composed of two distinct plate cylinders, with 5-inch-thick solid iron in the middle. Again, the side armor of these formidable iron-clads is nearly twice as thick as that of the *Monadnock*. What might we not expect in a naval conflict from these monster monitors, under the command of a plucky sailor like Vice-Admiral Porter? Having told us he could destroy any vessel in the French and British navy with the little *Monadnock*, with her 12-inch thick turrets, what force could resist his squadron of *Kalamazoos*, with 15-inch turrets? What town would refuse any "contribution" he might demand? As to ramming, your correspondent, with all his misgivings, surely cannot apprehend that the 6,000-tun craft, with their ponderous decks and armor offering an almost unlimited resistance, would be run over "like any other raft."

In the article under notice, the following paragraph occurs: "In the case of the *Saugus* three shots from a Brooke gun, at Howlett's Battery, knocked the turret into a cocked hat."

In the Admiral's report of Feb. 5, 1865, this circumstance is alluded to as follows, after stating that the *Saugus's* turret had been struck by a shot from a Brooke 200-pounder, which loosened some bolts. "This was owing to the bolts being driven from inside to out, instead of from outside to in. The turret was *not materially injured*."

We need only add the fact that is now well known that the *Saugus's*, as well as several other turrets, were very defectively put together. We feel very much mortified to find the following opinion, which occurs a little further on, to have been made by a "distinguished navy officer." "Their (monitor's) great superiority vanished with the late experiments at Fortress Monroe, and we might as well go ahead and make something stronger and faster."

How the experiment of firing at four one-inch plates, placed against an exceedingly massive granite wall, proves "their great superiority" to have "vanished," is not explained, probably, no doubt, from the fact that it could not be explained how this experiment had anything to do with the question of iron-clads at all. It was conducted for an entirely different object, and, we may add, that if the thickness of the iron had been doubled the effect on the unyielding structure of the target would not have been materially different.

The most remarkable paragraph appears to us to be the following: "This whole matter requires a great deal of consideration, and a Board of experienced officers should be appointed to recommend such improvements in iron-clads as may be required owing to the late advances in ordnance."

Now is it not perfectly clear that "late advances in ordnance" demand thicker armor? and how is thicker armor to be attained except on the monitor system? Have not the English and French pushed the broadside armor system to the maximum? and yet they admit that their armor is not thick enough. It is well known that the English iron-clads cannot support even their thin armor over their whole length. Is it possible that a "distinguished navy officer" desires to recommend that we copy the monster, vulnerable, costly, deep draft, and unwieldy European iron-clads?

VENTILATION OF THE NATIONAL CAPITOL.

We are in possession of a document from the Department of the Interior, which is a report on the method of warming and ventilating the two chambers of the national legislative bodies, with the offices and lobbies adjacent. Some complaint had been made that the air of the halls, particularly during the winter, was not entirely pure, and that headache and other annoyances were caused. After a very lengthy and exhaustive series of experiments, it was found that the air furnished was deficient in moisture, a matter that can be easily remedied.

The ventilation of the Capitol is altogether artificial. The air is forced into the apartments, through numerous apertures, by immense fans driven by steam power. The furnaces of the engines furnish the necessary heat for warming the air in winter by passing the columns of air in contact with stacks of pipes.

There are four fan wheels employed, one for each of the halls of Congress, and one for the committee rooms and passages in each wing. The fan for the Senate Chamber is 14 feet in diameter, weighing 6,536 pounds, and driven by a 16-horse engine, running from 30 to 60 revolutions per minute. At the lowest rate this delivers into the Senate Chamber 30,000 cubic feet of air per minute, being 20 cubic feet per minute for each one of 1,500 persons. The Hall of Representatives has a fan 16 feet in diameter, weighing 9,050 pounds, and driven by an engine of 30 horse-power. This fan can be run up to 80 turns per minute, delivering 100,000 cubic feet of air per minute, equal to entirely filling the hall every five minutes. In winter one half this capacity is exercised.

The other two fans for the committee rooms, offices, and corridors are each 14 feet in diameter, weighing over 5,000 pounds, and can be run to 60 revolutions. Driven each by a 16 horse-power engine.

In summer the air which is delivered to the building is cooled and hydrated by coming in contact with water falling in a shower, similar to the means employed in low-pressure engines for condensing steam. The same principle, or something similar, will probably be adopted to moisten the air used in winter for the double purposes of heating and ventilating.

THAT skating has become a fashionable exercise, is evident from the following statements as to the materials consumed during the present year, in one skate factory at Worcester, two tuns of brass, 5,000 gross of screws; 50,000 brass thimbles, 1,000 lbs. of German silver, nearly six tuns of rosewood, and ten tuns of steel, worked up by thirty-five men and women into 25,000 pair of skates.

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ISSUED FROM THE U. S. PATENT OFFICE

FOR THE WEEK ENDING NOV. 20, 1866.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

59,740.—DRILL FOR WELLS.—Perley Ainsworth, Cape Vincent, N. Y.

First, I claim the combining the center beam reamer, auger stem, sand pump, grabs, jars, sinker bar, and rope socket, so that they may be worked and used efficiently, separately or together, as above set forth.

Second, I claim the plan or method of coupling, as above described.

Third, I claim the grab jars, constructed as above described, separately and in combination with the apparatus, as above substantially set forth.

Fourth, I claim the tube and reamer, C, center bit, B, and valves, a a, constructed so as to admit of their being used separately or in combination with the other apparatus as a sand pump, pumping the debris or sediment into the main trunk as fast as made, by the action of either the center bit or reamer, or both, when worked together, as herein above substantially set forth.

Fifth, I claim the round reamer constructed as above described, separately and in combination with the apparatus, as above substantially set forth, whether attached to the bottom or the top of the auger stem or the sinker bar, cutting either upward or downward.

Sixth, I claim, in combination with the above described apparatus, the center bit made hollow, as shown at B B, and beveled at the edges, substantially as and for the purpose set forth.

59,741.—FILING MACHINE.—A. G. Burton and H. W. Covert, Rochester, N. Y.

First, We claim the table, C, adjustable in the manner described, in combination with the reciprocating file, K, substantially as and for the purpose herein specified.

Second, We claim the combination of two ball and socket joints, E D, adjustable in position, one bearing a file carriage and the other a table or support for the articles filed, for the purpose herein set forth.

Third, We claim the combination of the lateral auxiliary leaves, L, with the table, C, and file carriage, H, for the purpose of presenting the articles to be filed to the edge of the file, substantially as specified.

Fourth, We claim the arrangement of the machine as a whole, consisting of the carriage frame, B, the file carriage, H, the table, C, provided with the lateral leaves, L, and the universal joints, D E, constructed as described, the whole operating substantially as herein set forth.

Fifth, We claim the combination of the cam, m, with the file carriage, H, which is provided with a reacting force, so that its returns will economize time and power, as set forth.

59,442.—CORN PLANTER.—Wm. R. Butler, Greenbush, Ill.

I claim the combination, construction and arrangement of the boxes, F, plates, G, regulators, G', levers, H, and bar, H', substantially as and for the purpose represented.

59,743.—GATE.—Isaac J. Gray, Seville, Ohio.

I claim the double pivot revolving hinge, and the mode of its application to the hanging of gates, as described.

59,744.—MANUFACTURE OF HOES.—Reuben Harper, Philadelphia, Pa.

I claim the stamping of the plate and the forming of the shank in the manner and for the purpose substantially as set forth.

50,745.—BANDELORE.—James L. Haven and Charles Hettrick, Cincinnati, Ohio.

We claim the disks, A B, united at their centers by the rivet, F, and interlocking bosses, E, substantially as set forth.

59,746.—MACHINE FOR SEWING THE SEAMS OF LOOPED FABRICS.—Edward E. Kilbourn (assignor to Norfolk and New Brunswick Hosiery Company), New Brunswick, N. J.

I claim the combination in a seaming machine of the following devices, viz., the seaming mechanism, straight supporting plate, and feed screw, all operating in the combination substantially as set forth.

I also claim the combination in a seaming machine of the devices recited in the preceding claim, with cam collars operating upon the feed screw, substantially as set forth.

I also claim the combination in a seaming machine, of the needle, the looper, the cam that operates them, the carriage, and the mechanism for causing the carriage and its appurtenances to vibrate, all these devices operating in the combination substantially as set forth.

I also claim the combination in a seaming machine of a series of points for holding the loops of fabric to be traversed by the needle, with the reciprocating needle and the looper, and with a cam so formed as to cause the looper, after the passage of the needle through a loop of the fabric to be seamed, to take the loop of needle thread at one side of the needle and withdraw from it at the opposite side thereof, all operating in the combination substantially as set forth.

I also claim the combination in a seaming machine of the devices recited in the first claim, with a section of a nut that can be disengaged from the feed screw to permit the carriage to be moved quickly back to its starting point, all said devices operating in the combination substantially as set forth.

I also claim the combination in a seaming machine of the seaming mechanism with a supporting plate, provided with half as many supporting points as the number of stitches made by the seaming mechanism, so that the stitches are made in regular succession through the loops of the fabric and out of them, substantially as set forth.

59,747.—STONE-SAWING MACHINE. — Franklin S. Packard, Springfield, Mass.

I claim, First, Producing the rolling or rocking motion of the saws by the arrangement of the connections, d d' g g', and standards, f f', or equivalent devices, arranged substantially as herein described.

Second, Forming the ways or guides, k k', etc., for the slides, l l and h h, on a curve, substantially in the manner and for the purpose herein set forth.

59,748.—TOBACCO PRESS AND CUTTER.—Samuel G. Rice, Albany, N. Y.

First, I claim the cover, B, applied to a box, A, by a hinge at one end, and a vertical adjusting device at the opposite end, for the purpose of pressing the tobacco at or near its point of discharge from said box, substantially as described.

Second, The combination of an expanse, b b, follower, G, with a hinged pressing cover, B, press box, A, and cutter, K, substantially as described.

59,749.—MANUFACTURE OF PARAFFINE CANDLES.—Henry Ryder, New Bedford, Mass.

I claim my improved process as described for effecting the annealing or gradual cooling of paraffine in a mold, such consisting in the subjection of the mold containing the melted paraffine to a chilling bath of water of about freezing temperature, and subsequently allowing water of about such temperature to flow into, and warmer water to flow out of the chilling bath, as explained.

59,750.—MEDICAL COMPOUND.—Barclay Samson, Cortlandville, N. Y.

I claim a preparation or compound composed of the ingredients above specified, and compounded substantially in the proportions and manner set forth.

59,751.—TREATING HYDRO-CARBON OILS.—H. K. Taylor and D. M. Graham, Cleveland, Ohio.

First, We claim the disposing affinity of sulphuric acid, causing a chemical combination of the gases used with the oil, either in connection with our process, patented May 22, 1866, or in connection with other processes.

Second, The disposing affinity of sulphuric acid in the treatment of hydro-carbons, that its use in connection with other substances, solid, gaseous, or fluid, by means of which the energy combination of these substances, or parts of them, with the hydro-carbons, is very much increased.

Third, Treating oil by means of air and acid gases, substantially as set forth and described for the purposes specified.

59,752.—STOP-VALVE FOR STEAM PIPES.—George E. Whitmore (assignor to himself and E. S. Pixley), Housatonic, Mass.

I claim the eccentric pin, in combination with the valve stem for forcing the valve, A, against and into the valve seat, F F.

I also claim the choke plug, I I, which prevents the valve, A, and the valve seat, F F, from being worn by the action of the steam in passing between the valve, A, and valve seat, F F.

I also claim the arrangement of the ground joint, G G, at the inside end of valve stem, C C, and lead ring, H H, or equivalent, at outside end of valve stem, C C, which forms a double packing; and the combination of all these parts in the manner and for the purpose specified.

59,753.—GATE AND GATE POST.—George W. Balding, Pleasant, Ind.

I claim the invention of the form of the notches in the posts, being an open-hooked notch, with square or smooth bottom, so that the gate bearings can turn in them, as necessary, to open the gate as aforesaid, into which it is secured by a loosely fitting pin, reference being had to the said drawings.

Further, I do not confine my invention to any limited number of bearings or notches in the posts, but to the nature and principle of the aforesaid invention.

59,754.—LIGHTING GAS.—Arthur Barbarin, New Orleans, La.

First, I claim, in combination with ordinary burners for burning illuminating gas, the application and use of spongy platinum in connection with the means of projecting through or upon it a jet of hydrogen gas, substantially as described, for the purpose of igniting the gas issuing from the burners, as herein shown and set forth.

Second, I claim arranging the hydrogen gas pipe and spongy platinum above and on opposite sides of the gas burner to which they are applied, so that the hydrogen, while issuing from its pipe, shall traverse the course of the gas discharged from the burner, substantially as and for the purposes shown and set forth.

Third, I claim the method of and apparatus for simultaneously igniting two or more ordinary gas burners by the use of spongy platinum, acted on by hydrogen in the manner and by the means herein described, whether the pipes by which the said hydrogen gas is conveyed to the platinum be within or exterior to the pipes by which the illuminating gas is conducted to the burners.

Fourth, I claim the concentric arrangement of the pipes, conveying the illuminating and the hydrogen gases to their respective burners, the pipe by which the hydrogen gas is thus conveyed being within and surrounded by the pipe which conducts the illuminating gas, substantially as herein shown and set forth.

59,755.—MANUFACTURE OF BLANKS FOR HORSE SHOES.—Hazen J. Batchelder, Boston, Mass.

I claim, as an article of manufacture, a bar of metal, shaped, creased, and punched as herein described, and as represented in figs. 1 2 and 3, of the drawings, the same constituting a series of blanks suitable for horse shoes.

59,756.—MEDICAL COMPOUND.—Daniel D. T. Benedict, Havana, N. Y.

I claim the combination of the three medical materials herein named, namely, quinine, ipecac, and iodine, in the proportions herein stated, into one medicine.

59,757.—TOOL HANDLE.—C. W. Bioren, Philadelphia, Pa., assignor to Lysander Flagg, Central Falls, R. I.

I claim a tool handle, provided with the stationary ratchet, d, the double-faced sliding ratchet ring, e, and the revolving socket, b, having a ratchet on its under face, when said parts are combined and arranged to operate as shown and described.

59,758.—MACHINE FOR FELTING HAT BODIES.—Job W. Blackham, Brooklyn, N. Y.

First, I claim the combination and arrangement of the reciprocating presser, C, with the bed of rollers, b, so as to treat the hats by the surfaces of the presser and the rollers, substantially as and for the purpose herein set forth.

Second, I claim, in connection with the above, so proportioning the extent and velocity of the motion of the pressser, C, to the size and velocity of the rotation of the rollers, b, that the hats shall tighten in the roll and tend to stand and roll with only a rotary motion during a great portion of the return movement of the part, C, and shall tend to advance to an extent equal to the diameter of one of the rollers during each forward movement, substantially as and for the purpose herein set forth.

Third, I claim, in combination with the presser, C, and rollers, b, the springs, G 12, etc., or their equivalents, arranged as herein specified for increasing the force with which the hat is treated, as and for the purpose herein set forth.

Fourth, I claim, in combination with the presser, C, and rollers, b, the shaft, I, and cords, g, or their equivalents, arranged as specified, for graduating the effect of the force in holding down the presser, C, substantially as and for the purpose herein set forth.

Fifth, I claim the spring, P, or its equivalent, arranged to operate in opposition to the gravity of the presser, C, so as to reduce the pressure on the hats, substantially as and for the purpose herein specified.

Sixth, I claim the devices substantially as herein shown and described, for putting into and out of action the lateral motion of the bed of rollers, b.

59,759.—CHURN.—John C. Bodine (assignor to himself and J. Vickers), Camden, N. J.

I claim the oblong body, A, with its semi-cylindrical bottom, its detachable angular grate composed of bars, x, and its vertical slats, t, in combination with the central shaft, B, and its paddles, q, the whole being arranged and operating as and for the purpose herein set forth.

59,760.—LIME KILN.— Uriah Cummings, Buffalo, N. Y.

I claim in a lime kiln the draw flues, G G', and enlarged fire chambers, D', constructed and arranged with an unpartitioned cupola, substantially as described.

59,761.—APPARATUS FOR MEASURING LIQUIDS.—E. K. Dutton, Manchester, England.

First, I claim the chamber, g, its openings, e and f, and two-way cocks, c, or their equivalents, in combination with the tubes, l m, and receptacle, i, the whole being constructed and arranged substantially as described.

Second, The combination of the above with the within-described registering mechanism and dials.

59,762.—ANIMAL TRAP. — Samuel F. Estell, Richmond, Ind.

First, I claim the double rack, N N, constructed and operating substantially as set forth and for the purposes described.

Second, I claim the shaft, H H, the crank, m, and arms, b b, all made of one single piece of wire, when operating substantially in the manner and for the purposes described.

Third, I claim the rack, N N, shaft, H H, crank, m, arms, b b, doors, K K, and panels, S S, in combination, the box, J, the openings, A A, and platform, B, all arranged substantially as set forth and for the purposes described.

59,763.—LINE WIRE FOR TELEGRAPHS. — M. G. Farmer, Salem, Mass., and G. F. Milliken, Boston, Mass.

We claim, in combination with the instruments making up with the conducting wire a telegraph circuit, a copper wire conductor strengthened with iron or steel, substantially as set forth.

59,764.—LOCK-UP SAFETY VALVES. — Chileon M. Farrar, Buffalo, N. Y.

First, I claim the arrangement and combination of compound levers, D F, movable and adjustable fulcrum, I, fixed weight, H, and safety valve, B, within a suitable lock-up box, A, for the purposes and substantially as described.

Second, The hook, L, having a long handle projecting upwardly through the box, in combination with the lock-up box, for the purpose and substantially as set forth.

Third, The plate, N, placed under the escape pipe and within the box, A, for the purpose and substantially as described.

59,765.—COTTON-SEED PLANTER.—Henry R. Fell and Edward Phifer, Trenton, N. J.

We claim the combination with the hopper and spout, of the shaft, M, provided with the feeding screw, P, and stirring rods, N, operating substantially as described.

59,766.—COAL-OIL STOVE OR GAS HEATER.—C. A. Harper, Rahway, N. J.

First, I claim the combination of an exterior and interior drum with draft pipes and air flues, when arranged substantially in the manner and for the purpose set forth.

Second, A shifting heater, movable upon slides, when used in combination with an exterior and interior drum, substantially as set forth.

59,767.—DEVICE FOR OPERATING THE SHUTTLES IN LOOMS.—Joseph J. and Edward Harrison, Manchester, England.

First, We claim the novel and peculiar arrangement of mechanism described, for expelling the shuttle of looms from one box unto the other, and vice versa, without the use of the picker as now employed for the same purpose.

Secondly, We claim the eccentric swell and the apparatus in connection therewith for gradually and effectually checking the shuttle upon its being received by the shuttle box, and also for instantly releasing the same upon the expulsion, as hereinbefore described, set forth, and fully illustrated in the drawings attached.

59,768.—PREVENTING THE INCRUSTATION OF STEAM BOILERS.—A. T. Hay, Burlington, Iowa.

I claim the use of a galvanic battery, or its equivalent, placed outside of the boiler of a steam engine, the two poles of which battery are connected respectively with the opposite ends of the boiler, substantially as and for the purpose above set forth.

59,769.—TRUSS BRIDGE.—George P. Herthel, Jr., St. Louis, Mo.

First, I claim a trussed bridge, or other structure, having flexible joints throughout, when constructed substantially in the manner herein described.

Second, In the construction of truss bridges and other structures, forming the joints between the posts, braces, and cords thereof, or either of them, by interposing a rod or bolt in such joint, whereto said posts, braces and cords shall be so pivoted or otherwise loosely connected, as to form a flexible or yielding joint, each part being independent in movement, all substantially in the manner and for the purpose herein set forth.

Third, The arrangement of the braces, K, for adjustment of the parts forming the panels, in combination with the keys, g4, for adjustment of the end parts, thus by said combination permitting a change or reproduction of camber, substantially as set forth

Fourth, The general combination of the parts, F, with G H I and K, substantially as and for the purpose set forth.

59,770.—TOOL FOR SHARPENING SICKLES OF HARVESTERS, ETC.—John Jann, New Windsor, Md.

I claim the tool holder, A B, in combination with substitute cutter plates, C C C, of varying angular forms, applied and secured to said holder, as and for the purpose described.

59,771.—CEMENT.—Adolph S. Jourdan, Nashville, Tenn. Antedated November 9, 1866.

I claim the herein described cement, consisting of shellac and pumice stone, substantially as set forth.

59,772.—LAMP BURNER. — Anson Judson, Brooklyn, N. Y.

First, I claim making the shell of the burner and the wick tube in a single piece, substantially as and to the effect hereinafter set forth.

Second, Making the shell of the burner with vertical slits or openings for the admission of air to supply the flame, when said openings are so formed and arranged as to permit the said shell to be cast in a two part flask, and without cores to form said openings, as hereinabove set forth.

59,773. — APPARATUS FOR SEPARATING METALS FROM ORES.—Stephen R. Krom, of New York City, assignor to Apollos R. Wetmore.

First, I claim giving the intermittent action to the blast in a separating machine, substantially as specified, by means of the valve, M, or its equivalent, operating between the blowing means and the perforated bed, substantially as herein set forth.

Second, I claim the endless traversing perforated bed, E, in combination with means for blowing through the upper half thereof, so as to lift and agitate the material thereon, substantially as herein set forth.

Third, I claim the tube, a, or its equivalent, of less breadth than the endless belt, E, and adapted to carry the fresh material down and deposit it immediately upon the endless belt, E, while the lighter material is allowed to traverse past it down the incline, substantially as and for the purpose herein specified.

Fourth, I claim the scraper, K, arranged to operate in combination with the endless traversing perforated bed, E, and with means for producing intermittent blasts or puffs of air through the same, substantially as and for the purpose herein specified.

59,774.—CEMENT FOR LEATHER. — Albert Leach, Lynn, Mass.

I claim as my invention the composition made of the materials and in the manner substantially as hereinbefore specified.

59,775.—COAL STOVE.—James S. Marsh, Lewisburgh, Pa.

I claim the construction of a stove with an upper single heat-radiating wall, and with a lower air-heating space, which is formed by the outer wall and fire pot, and which is provided with a pipe leading through the smoke pipe, or some other portion of the stove, where it will be exposed to the escaping products of combustion, as described.

59,776.—MEDICAL COMPOUND.— Zephaniah Marshall, Andersonville, Ind.

I claim the within-described medical compound, for the purpose specified

59,777.—CUT-OFF VALVE GEAR.—William G. Pike, Philadelphia, Pa.

First, I claim the combination of the double arm, G, cylinder, a', and dash pot, b', in the manner and for the purpose substantially as shown and described.

Second, The spring boxes, l l', with their inclosed spring, k k', adjusting screws, m m', and bearing rods, i i', in combination with the rods, S S', in the manner and for the purpose substantially as shown and described.

Third, The lifter, q, arranged and operating substantially as shown and described.

59,778.—DIE FOR CUTTING AND POINTING WIRE.—J. C. Plumer, Boston, Mass. Antedated Nov. 10, 1866.

I claim the device, substantially as shown in figs. 3 and 4, and for the purpose specified.

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59,779.—Self-lubricating Axle Box for Carriages.—Silas S. Putnam, Dorchester, Mass.

First, I claim the chamber, a, with the slots, c, in combination with the openings, b, at its inner end, constructed and operating substantially as set forth.

Second, I claim the axle box, A, provided with a flange, e, and finished with a projection, f, which forms the outer end of the hub, in combination with the screw nut, F, for confining it tightly in place within the hub, substantially as set forth.

59,780.—Steam Generator. — Edwin Reynolds, Boston, Mass.

I claim the section, c, when constructed and arranged so as to operate substantially as described.

Also, in connection therewith, I claim the arrangement of the sediment chambers in the ends of the lower pipes, a.

59,781.—Churn Dasher.—James T. Rittenhouse, Urbana, Ill.

I claim the combination of the arms, A A, made tapering, as above set forth, with the diamond-shaped wedges, B B, attached to the ends thereof, for the purpose of agitating the cream in such a manner (forcing it upward and outward), as to admit of a free circulation of air while thus agitated. No claim whatever is made to that part of the dasher designated as the shaft, except in so far as it is necessary to secure, by the use of it, the combination above mentioned.

59,782.—Apparatus for Obtaining Oil from Wells.—William Shoupe, Saltburgh, Pa.

First, I claim, in combination with the well pipes, B and D, and a chamber, E, the gas pipe, F, having a safety valve applied to it, substantially as described.

Second, Sustaining the pump tube, D, in the well by means of a self-sealing dome, E, or its equivalent, which forms a chamber at the top of the well, communicating with the gas space between the two pipes, B and D, substantially as described.

Third, The inlet, J, applied to the dome, E, for admitting of the introduction of water into the well, substantially as described.

Fourth, The means, substantially as herein described, whereby oil is allowed to flow into the outer casing, B, at points intermediate between the packing, and, at the same time, the surface water is kept back and not allowed to flow into the well.

Fifth, In combination with a casing, B, which is perforated at suitable points, and which encloses the pump tube, D, I claim the chamber, E, and an outlet pipe which is provided with a safety cock or valve, substantially as described.

59,783.—Apparatus for Binding Circular Paper or other Fans. — Roswell T. Smith, Nashua, N. H.

I claim constructing a fan binder, with the circular disk, A, or its equivalent, in combination with the hinged flap, B, mounted upon a suitable turn stand, a, substantially in the manner and for the purpose herein described.

59,784.—Dental Plugging Instrument.—G. B. Snow and T. G. Lewis, Buffalo, N. Y.

We claim so constructing a dental plugging instrument that it may be operated automatically to give repeated blows, or its operating parts locked so that it may be used as a hand-pressure instrument, substantially as described.

59,785.—Scissors Sharpener.—James J. Tobey, Boston, Mass.

I claim the combination and arrangement of the block, A, the steel, B, and the screw, C, in such a way as to form a scissors sharpener, substantially in the manner and for the purpose set forth.

59,786.—Type Separator.—Elber Van Gieson, Newark, N. J.

First, I claim the use of the springs, or spring levers, e, and the spring, g, constructed, arranged, and operated in the manner and for the purpose specified.

Second, Also, each cam and lever, shown and described, when used in combination with the springs, e and g, substantially in the manner and for the purpose hereinabove set forth.

59,787.—Coating Sheet Iron with other Metals.—John H. Whitting (assignor to J. Bardsley and M. Hall), Philadelphia, Pa.

I claim coating sheet-iron plates with tin or other metals, or alloy, by the process substantially as herein described.

59,788.—Machine for Washing and Drying Wool.—John and William Yewdall, Philadelphia, Pa.

First, We claim the hollow cylinder, E, with its bars, F, and pins, e, in combination with the weighted pressing roller, H, the whole being arranged and operating as and for the purpose described.

Second, The sectional grooved plates, G, constructed and adapted to the cylinder, E, and its bars, F, substantially as and for the purpose specified.

59,789.—Adjustable Damper for Fireplaces.—Stephen Albertson, New York City, administrator of the estate of Samuel Albertson, deceased.

I claim the combination of the extension piece, k, with the rack and pawl, for the purpose of governing or controlling the sliding plate upon and with the stationary plate, as herein described and set forth.

59,790.—Churn.—John Davis, 2nd, Lake Village, N. H. Antedated Nov. 16, 1866.

I claim the hollow, conical agitators, E E, with their air-supplying tubes, G G, arranged and operating substantially as and for the purpose herein specified.

59,791.—Manufacture of Artificial Fuel.—Henry G. Dayton, Maysville, Ky., assignor to himself, B. Young, N. C. Morse, and R. B. Wilson.

I claim, as a composition for treating or saturating corn cobs or kindling wood, a compound of rosin and the residuum of the petroleum distillation, in about the proportions described.

I claim, also, as as a new article of manufacture, a kindling material composed of corn cobs, treated or saturated with the above composition.

59,792.—Faucet.—Daniel Drawbaugh, Eberly's Mill, Pa.

First, I claim the hubs, b and c, with their pistons, constructed and operating substantially as above described, that is to say, so that when the one of those hubs has a constant motion, that of the other shall be intermittent, substantially in the manner and for the purpose above shown.

Second, In combination with the subject matter of the first claim, I claim the recess, k, upon one or both the flat surfaces which are swept by the hubs and pistons aforesaid, which said recesses enable the liquid drawn through said faucet to pass outward toward the eduction pipe, h, from between the said pistons, substantially as described.

Third, In combination with the subject matter of the first claim, I claim the cogged wheel, s, with its index, x, and the pin, m, upon the crank, n, for the purpose of denoting, automatically, the precise number of revolutions of said crank, substantially as described.

Fourth, In combination with the subject matter of the first claim, I claim the gate, g, having its face and the plane of its seat inclined to the axis of revolution of such gate, substantially as and for the purpose described.

59,793.—Faucet. — Daniel Drawbaugh, Eberly's Mill, Pa.

First, I claim the combination of the screw flanch, b, spigot, A, chamber, h, and piston, p, substantially as and for the purpose set forth.

Second, I also claim, in combination with the above, an indicator, d, attached to the piston, p, and a proper scale on the outer side of the vessel, h, by which to denote the exact amount of fluid within that vessel, substantially as and for the purpose described.

59,794.—Bedstead Fastening.—William H. Elliot, New York City.

First, I claim so constructing the mortise cut in the fact of the post, and the tenon cut on the end of the side rail, that the tenon, with its projections, may pass to its place in the mortise by a direct downward and inward movement, substantially as herein set forth.

Second, Cutting the bottom of the mortise and the end of the tenon at an angle which corresponds with the direction of the movement of the tenon when it passes into the mortise, as herein shown.

Third, The combination of the several shoulders, herein described, for supporting the side rail, when formed out of the solid material of the bedstead, and operating as set forth.

59,795.—Bedstead Fastening.—William H. Elliot, New York City.

First, I claim cutting the seat for the key, c, in the contiguous surfaces of the mortise and tenon, substantially as shown and described.

Second, The key, c, when placed between the contiguous surfaces of the mortise and tenon, and supported as herein shown, in combination with the mortise and tenon, as a self-tightening bedstead fastening, substantially as specified.

59,796.—Skates.—A. W. Elmer (assignor to himself and C. Ensminger), Springfield, Mass.

I claim an elastic skate having the foot plate, B, and runner, A, combined with the spring, M, constructed and operating substantially as described.

59,797.—Burning Fluid.—Geo. L. Fattie, Buffalo, N. Y.

I claim an illuminating burning fluid, compounded substantially as herein described.

59,798.—Roller for Clothes Wringer.—James Bennett Forsyth, Roxbury, Mass.

I claim a roll, constructed substantially as described, with a core so formed that the ends of the threads of the cloth will rest upon the shaft for the purpose set forth.

59,799.—Spring Holder for Bed Bottoms.—Rufus Lapham, New York City.

First, I claim the device for attaching the spring to its seat, substantially as described.

Second, The combination of the screw seat and spring, substantially as described.

Third, Also, the combination of the seat, spring, and frame, substantially as described.

59,800.—Photographic Printing Frame.—C. L. Lochman, Carlisle, Penn.

First, I claim, on the one side or body of a photographic printing frame, two adjustable rabbeted bars, F F, to hold a negative in place, in combination with two or more tightening screws, E E', or their equivalents.

Second, I claim the adjustable hinged piece or bar, J, with its mortised ends, and supporting screws and burs, constructed and operated substantially in the manner set forth.

59,801.—Reel.—Daniel H. McLean, Ilion, N. Y.

I claim, in combination with the hinged or pivoted arms of the reel, the washer or nut for spreading and forcibly holding said arms to the skein, and against any tendency to rise on their pivots or hinges, substantially as described.

59,802.—Churn.—Eli McMillan, Jr., Wilmington, Ohio.

I claim the combination of the imperforate dashers, B C, rods, B' C', guiding stem, D, flywheels, F F', and cranks, I I', all constructed, arranged, and operating as and for the purposes specified.

59,803.—Medical Compound.—David W. Stutsman, Upshur, Ohio

I claim the composition, for a fever and ague pill, composed and compounded as set forth.

59,804.—Iron Gutter.—Edward Whitehead, Cincinnati, Ohio.

I claim the cast-iron gutter, A A' B C, when provided with the longitudinal slot, D, as and for the purposes herein described and set forth.

59,805.—Electro-magnetic Car Brake.—Francois Ferdinand Auguste Achard, Paris, France.

I claim, First, The eccentric, B, and lever, C, in combination with the magnetic cylinder, N, flanged drums, O, and brakes, 5, all constructed and operating substantially as and for the purpose described.

Second, The sliding armature, I, and hand-lever, 6, in combination with the electro-magnet, K, lever, C, and eccentric, B, constructed and operating substantially as and for the purpose set forth.

59,806.—Drying Fruit, etc.—R. N. Allen, Cleveland, Ohio.

I claim, First, One or more adjustable frames, D, constructed substantially as and for the purposes set forth.

Second, The combination of the truck, C, with the adjustable frames, D, as and for the purpose set forth.

Third, The arrangement of an open or perforated ceiling, K, carriage, C, and frames, D, when used in connection with a drying apparatus, for the purposes set forth.

59,807.—Cider Mill.—Thomas Appelget, Princeton, N. J.

I claim the machine constructed to operate substantially as described and in the manner set forth, to press the juice from ground fruit by means of passing the pomace between the endless belts which are geared to work together, and have pressure rollers above and below that part of the belts which have the pomace between them.

59,808. — Lamp-chimney Cleaner. — Frederick Ashley, New York City.

I claim so constructing the holder or holders for the sponge, etc., of a lamp-chimney or other similar cleaner, that the said sponge, etc., can be attached thereto or detached therefrom at pleasure, substantially as and for the purpose described.

59,809.—Smoke Furnace for Curing Meat, etc. —John I. Barringer, Germantown, N. Y.

I claim, First, The fire pan, J, constructed as described, in combination with the smoke furnace, A D, substantially as and for the purpose set forth.

Second, The combination of the covers, H G, one or both, with the furnace, A D, substantially as described and for the purpose set forth.

59,810.—Combined Lantern and Foot Warmer. W. F. Bartlett, Hillsdale, Mich.

I claim the cross flues, D', and reflector, H, in combination with the lamp, G, and case, A, as and for the purpose set forth.

59,811.—Churn.—E. H. Beckwith, Westernville, N. Y.

I claim, First, The curved hanging arms, g g, combined with the metal hubs, e e, the wooden bushes, h h, the wooden wings, f f, and the sliding hub, d, on the spindle, C, when arranged in a churn, substantially as and for the purposes herein specified.

Second, I claim making the outer ends, c' c', of the cross ribs, c c, on the bottom of the churn diverging at an angle from them and higher than they are made, substantially as herein specified.

59,812.—Oyster Dredging Apparatus.—William Belbin, Baltimore, Md.

I claim, First, The davit, G, pivoted upon the gunwale and provided with a lever by which the dredge is raised, substantially as described.

Second, The auxiliary bow, I, of the dredge.

Third, The flange in the gunwale roller.

Fourth, The roller or sleeve, e, on the post of the davit.

59,813.—Gang Plow.— D. Bequeret and E. Demonlin, Jamestown, Ill.

We claim a plow composed of a long and a short beam with plow shares, F F', which are operated by levers, G G', in combination with the unequal crank axle, C, draft pole, E, placed in line with the short beam and with the caster wheel, I, all constructed and operating substantially as and for the purpose set forth.

59,814.—Stove Cricket.—Frank Bowman, Waltham, Mass.

I claim the peculiar construction and arrangement of a portable stove cricket, substantially as and for the purpose set forth and described.

59,815.—Heater for Soldering Irons.—R. Brady, New York City.

I claim, First, The cylinder, B, of the furnace lined with a series of castings, H, having air spaces between them, substantially as and for the purpose described.

Second, The inclined rests or supporters, G, for the soldering irons, substantially as described.

59,816.—Apparatus for Sealing Fruit Cans.—E. K. Bruce and J. M. Bruce, Wilkins, Pa.

First, We claim the cement vessel, E, provided with a discharge opening or tube with a cut-off or valve, K, in combination with a rotary table or disk, O, on which the can to be sealed is placed, and a screw clamp or its equivalent for holding the lid or cover on the can while the latter is being sealed, substantially as shown and described.

Second, The adjustable bar, C, fitted on the upright bar, A', in connection with the adjustable arm, D, placed on bar, C, all arranged as shown, to admit of the proper adjustment of the cement vessel to the can to be sealed, as set forth.

Third, The central tube, F, in the cement vessel, E, in combination with the lamp, G, fitted in an adjustable support, H, when said parts are used in connection with the rotary table or disk, O, and clamp, for the purpose set forth.

59,817.—Machine for Ornamenting Molding. J. W. Campbell, New York City.

I claim, First, Constructing a machine for forming long strips of ornaments either independently or to be attached to moldings, consisting of a combination of the hopper, i, wheels, g and h, rollers, m and s, and wheel, p, and operating substantially as described.

Second, The application of the strip of muslin or other material for the purpose of supporting the plastic material, while and after the same is being finished in the manner specified.

Third The box, r, for the purpose of supplying gum to the molding, so that the ornament may at once be firmly attached to the same, substantially as herein shown and specified.

59,818.—Treadwheel Hoisting Power.—Joseph C. Cassel, Worcester Township, Pa.

I claim the arrangement of the treadwheel provided with notches and pawl, and the platform with handles, the whole being adapted as described to the purpose set forth.

59,819.—Harness Reins.—William Clark, Valatie, N. Y.

I claim the combination of the stop, D, with the harness reins, A, substantially as and for the purpose described.

59,820.—Door Bell and Burglar Alarm.—D. L. Collins (assignor to himself and Elbridge Sims,) Antwerp, N. Y.

I claim the within-described door bell and burglar alarm, consisting of a single hammer, D, arm, E, piece or tappet, F, spring, J, cam, L, spindle, K, curved notched arm, L2, actuating spring, S, spindle, P, and projections, Q R, arranged in connection with the bell, A, as and for the purpose specified.

59,821.—Stave Machine.—J. C. Cook, Buffalo, N. Y. Antedated Nov. 16, 1866.

I claim the combination and arrangement of the self-adjusting feed rollers, G G, spring roller guide, a, fixed guides, b and c c, and the two cutter heads, H I, having a different number of cutters, substantially as and for the purpose herein specified.

59,822. — Fabric for Hats and Bonnets. — E. Copleston, Wrentham, Mass.

I claim as a new article of manufacture, hats or bonnets made by flocking upon the surface of a foundation or body of buckram or other suitable fabric, substantially as herein described.

59,823.—Rods of Punching Presses.—Joseph V. C. Crate, Waterbury, Conn.

I claim the shaft, A, in combination with the screwed rod, B, and spring, E, constructed, arranged and operated substantially as described.

59,824. — Method of Holding and Adjusting Scaffolds.—William A. Devon, Richmond, N. Y.

I claim the combination with the platform, C, of the winch barrel, G, falls, c c, of end tackles, E E, intermediate block, F, and window hooking frames, G G, for operation together essentially as herein set forth.

59,825.—Bedstead Fastening.—William H. Elliot, New York City.

I claim the combination of the mortise, m, the tenon, c, projections, i, depression, i', and key, c, when these devices are so employed as to form a self-tightening bedstead fastening, substantially as herein shown.

59,826. — Tenoning Machine. — D. Evers, Van Wert, Ohio.

I claim the cutter head constructed of the sliding collars, d d, saws, e e, cutters, s s, and mortised bolts, i i, when arranged and operating substantially as described for the purpose specified.

59,827.—Combined Seeder and Harrow.—Asahel Fairchild, Independence, Iowa.

First, I claim the roller, A, provided with cams, C C, in combination with the harrow bars, H and K, for the purposes and substantially as described.

Second, I claim the separate harrow bars, H and K, pivoted levers, I I, in combination with the slotted lever, M, and slide, P, and agitator, O, substantially as described.

Third, I claim the combination of the rock shaft, S, with the frame, G, and slide, a, for the purpose of shutting off the grain when the harrows are raised, substantially as herein set forth.

59,828.—Wind Wheel.—J. C. Fay, New York City.

First, I claim the two vertical wheels, I I, placed side by side in the box, A, connected with each other by gears, r r, and to a power shaft, L, by gears, J K, substantially as and for the purpose set forth.

Second, In combination with the wheels, I I, the doors, C C, applied to the front end of the box, A, as shown, so as to open and close and admit of a greater or less amount of wind to pass through the box and act upon or against the wheels, as set forth.

Third, The governor, H, connecting with and receiving its motion from the wheels, I I, and connected with the doors, C C, as shown, or in any equivalent way so that the doors will be open and closed and the speed of the wheels rendered uniform under variable degrees of velocity of the wind as set forth.

Fourth, The power shaft, L, connected by a pinion, K, and toothed wheels, J, with the wind wheels, I, in combination with the base, M, provided with the annular way, t, and the box, A, having rollers, s, attached to its under side to work on the way, t, substantially as and for the purpose specified.

59,829.—Seeding Machine.—J. D. Field, Keokuk, Iowa.

First, I claim the intermittingly rotating scrapers or shovels, G G, and rods, c, in combination with the fixed scraper, H, arranged to operate in the manner substantially as and for the purpose set forth.

Second, The arms, J J', in combination with the cam, L, having the pins, d d, attached the arm, K, and spring, l, for operating the cylinder, O, substantially as and for the purpose specified.

Third, The cylinder, O, placed within a case, L, which com-

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municates with the seed box, N, and provided with the holes, p p', and an inclined projection, t, within it in combination with the bar, P, with shoe or cut-off, b, attached, all arranged to operate substantially as and for the purpose set forth.

59,830.—POCKET MATCH SAFE.—Charles E. Fowler, Carmel, N. Y.

I claim an improved match safe, A, so constructed that the lid, a2, may close down over the opening and over the roughened part, a3, of the box, being kept closed by its own spring or elasticity, substantially as herein described and for the purpose set forth.

59,831.—BRICK MACHINE.—E. R. Gard, Chicago, Ill.

I claim the striking plate, M, and plate, P, when applied or arranged substantially as shown and described, to yield or detach themselves in the event of stones or other foreign substances entering the molds, as set forth, the whole being constructed and operating in the manner and for the purpose herein described.

59,832.—BALING PRESS.—C. W. Gillis, San Antonio, Texas.

First, I claim the upright windlass, B, with rope, D, attached in combination with two rollers, a, fitted in sockets, F, at each end of the follower or plunger, E, and the roller, e, in bar, f, all arranged substantially as and for the purpose set forth.

Second, The bar, G, attached to the follower or plunger, E, with roller, c, at its ends working in grooves, d, in the sides of the press box, substantially as and for the purpose specified.

Third, The adjustable or pivoted racks, H, in combination with the pawls, I, and the bars, J, all arranged and applied to operate in the manner substantially as and for the purpose set forth.

Fourth, The securing of the doors, K K', in a closed state by means of the battens, f, buttons, j, in connection with the hinged bars, M M, provided with slotted lips, m, with a key, l, driven in them substantially as shown and described.

59,833. — PRESERVING OYSTERS. — E. T. Gilmore, Springfield, Mass.

First, I claim the method herein described of putting up oysters for preservation.

Second, The oyster can, having two apartments, B and C, arranged substantially as and for the purpose set forth.

59,834.—WAGON BRAKE.—Isaac and I. M. Gross, New Galena, Pa.

We claim the shoe bar, B, in combination with the lever, J Q, pulley blocks, K M, rope, L, windlass, O, lever, R, and rod, j, all arranged and applied to a wagon, substantially in the manner as and for the purpose set forth.

59,835.—AXLE NUT FOR WAGONS, ETC.—John Haggert, New York City.

I claim the combination with the axle arm, a, and collar, f, of the grooves c q l, projections, h, and cap, o p, when all are constructed and arranged as herein specified to form a bayonet joint with a shoulder at right angles to the axis, to secure the wheel upon the axle, as explained.

59,836.—MODE OF ATTACHING PICTURES TO FRAMES.—Stedman W. Hanks, Lowell, Mass.

I claim the combination of claps, A, with hooks or clasps, B, and wire springs, c, supported upon nails or tacks, D, operating in the manner and for the purposes set forth.

59,837.—STUFFING BOX.—William Harsen, Greenpoint, N. Y.

I claim the combination of the lugs, D D, having threads on their inner faces and forming an open or divided screw box with the screw formation, s, on the gland, C, outside of the socket, for operation together, substantially as specified.

59,838.—GRAIN-HULLING MACHINE.—F. Henckel and William Seck, Munich, Bavaria.

First, We claim the method herein described of separating the grain in two or more currents and uniting the same again, consisting of the centrifugal feeder, T, channels, W, terraces, E F, jacket, A, and apertures, a, substantially as described.

Second, The adjustable slide, R, in combination with the apertures, a, in the jacket, A, and with the several terraces of the revolving drum, when constructed and operating substantially as and for the purpose described.

59,839.—LAMP WICK.—Isaac L. Hoard, Bristol, R.I.

First, I claim paper lamp wicks made of paper pulp, substantially in the manner herein described and for the purpose set forth.

Second, The use of paper pulp for the manufacture of lamp wicks, substantially as described and for the purpose set forth.

59,840.—MAKING SAND CORES FOR AXLE SKEINS AND HUB BOXES.—James G. Holt, Chicago, Ill.

First, I claim a frame which is constructed substantially as described and adapted for sustaining a series of core boxes in a fixed position during the operation of making a sand core.

Second, The means substantially as explained for making one or many sand cores upon a sand bed, so that the axis of the core shall be perpendicular to said bed, thus insuring the proper centering of the core in the mold for which they are adapted, substantially as set forth.

59,841. — SAWMILL. — Samuel Jackson, Jr., New York City.

First, I claim the combination of the segmental gears, pinions, movable boxes, caps, and grooved guides for turning the saw while retaining the belt in position, when the same shall be constructed and operated substantially as shown.

Second, The combination of the belt, grooved cam wheel, and sliding guide, for the purpose specified.

59,842.—BOOT TREE.—William and A. G. Kelsey, Delevan, Wis.

We claim the independent center, C, and pivoted stretchers, a a, in combination with the follower, c, and rod, d, all arranged as herein described, and adapted to operate upon a boot tree, as set forth.

59,843. — APPLE PARER. — Horatio Keyes, Terre Haute, Ind.

First, I claim the segmental wheels, d d, in combination with the lever brake, h, and the paring knife arm, f', constructed and arranged substantially as and for the purposes herein described.

Second, I claim also the segmental wheel, i, and the pin, m, in combination with the eccentric rack frame, k, and rack, j, constructed and arranged substantially as and for the purposes herein specified.

Third, I claim also the combination and arrangement of the bevel wheel, c', with the segmental wheels, d d', the pin, m, the segmental wheel, i, the eccentric rack frames, k, the lever brake, h, and the knife arm, f', constructed and operated substantially as and for the purposes herein set forth.

59,844.—SPRING FISH HOOK.—Jacob King, Jr., Fort Wayne, Ind.

I claim the tube, A, with the hooks, C, pivoted to it and provided with the pinions, c, and catches, j j, in combination with the internal tube, D, provived with the spring, e, and rack, d, in which the pinions, c, gear, and the rod, E, provided with the cup disk, h, and spring, i, all arranged to operate substantially in the manner as and for the purpose set forth.

59,845.—MEDICAL COMPOUND FOR THE CURE OF FOOT ROT IN SHEEP.—Daniel Kinney, Loami, Ill.

I claim the improved medical compound herein described, for the purpose specified.

59,846.—SAWMILL.—Dennis Lane, Montpelier, Vt.

I claim operating the carriage by means of the lever arm, Q, with its lip, a, and friction roller, R, belt, K, pulleys, L and M, clutch, S, hollow loose wheel, I, operating shaft, J, forked arm, V, and slide, W, constructed and arranged substantially as described for the purpose specified.

59,847.—EXTINGUISHING FIRE.—James R. Laurent, Milford, Pa.

I claim the solution of bicarbonate of soda and common salt in combination with alum, applied and operating substantially as and for the purpose set forth.

59,848. — BALANCED SLIDE VALVE. — John Lockhead, San Francisco, Cal.

I claim the overhanging edge or flange, e, of the ring, D, in combination with opening, b, in the valve, B, and with the inner surface of the steam chest cover, constructed and operating substantially as and for the purpose described.

59,849.—ENVELOPE.—Richard Magee, Philadelphia, Pa.

I claim an envelope for use, closed at its top and bottom and open at both ends, one of the inner sides of each of the said ends being gummed and the other provided with a flap gummed in like manner so that either can be cemented to the inclosure, substantially as described for the purpose specified.

59,850.—PAINT BRUSH.—John Marchbank (assignor to James McQuade), Lansingburgh, N. Y.

I claim the coiled wire ferrule, C, enlarged at the center and adapted to admit of the insertion of the bristles, substantially as and for the purpose specified.

59,851. — BLACKING. — John McCrellish, Philadelphia, Pa.

I claim a blacking or coloring composed of the ingredients herein specified and described.

59,852.—WRENCH.—James McLaren, Albany, N. Y.

I claim the within-described tool as a new article of manufacture.

59,853.—COTTON PRESS.—Thomas E. McNeill (assignor to himself and Wm. D. Miller), Lynchburgh, Va.

I claim, First, The cylinder, J, pipes, I and N, in combination with the cylinder, O, for the purposes and substantially as herein shown.

Second, I claim cylinder, J, piston, L, in combination with the press or follower, K, substantially as described.

Third, I claim a hydraulic press provided with or constructed with two cylinders so as to operate or act in conjunction with each other or separately when constructed and operated for the purposes and substantially as described.

59,854.—MACHINE FOR ROLLING RUBBER.—Charles V. Mead, Hamilton, N. J.

I claim, First, Rolling rubber by the action of the reciprocating table, H, and platform, A, substantially as herein set forth.

Second, The springs, a, in combination with the pinions, F, racks, G, table, H, and platform, A, constructed and operating substantially as and for the purpose described.

Third, The weights, I, or their equivalents, in combination with the table, H, and platform A, constructed and operating substantially as and for the purpose set forth.

59,855.—GANG PLOW.—Peter Merkel, St. Louis, Mo.

I claim, First, The combination of the windlass, M, shaft, L, with its arm, n and p, links, q, and plow beams, I, substantially as described for the purpose specified.

Second, I claim the adjusting of the plows, J, higher or lower to suit the depth of furrow required, and also adjusting the wheel, C', by means of the shaft, G, provided with the pinions, f f g, and the rack bars, F F, and slide, d, provided with a rack, substantially as and for the purpose set forth.

Third, The fitting and securing of the front ends of the plow beams, I I, in a cross piece, H, composed of two parallel bars, j j, provided with journals, m, fitted in the rack bars, F, substantially as and for the purpose specified.

59,856.—MACHINE FOR CHANNELING STONES.—Andrews T. Merriman, Rutland, Vt., and Thomas Ross, Middlebury, Vt., assignors to themselves and J. B. Reynolds and R. Berrett, Rutland, Vt.

We claim, First, A stone-channeling machine composed of a gang of cutters in combination with the direct-acting steam cylinders, the automatic valve gear, and provided with a suitable truck frame upon which the boiler and whole apparatus is mounted, constructed and operating substantially as described and for the purpose specified.

Second, The adjustable cross piece, h, and feed screw, j, in combination with the cutter bar, K, and cross head, I, substantially as described and for the purpose set forth.

Third, Operating the feed wheel, y, from the cross head, I, by means of the rod, d', lever, r, rod, s, and rock shaft, u, or their equivalents, operating substantially in the manner described.

Fourth, Mounting the wheels, B and B', on adjustable brackets, substantially as and for the purpose described.

Fifth, The method herein described of changing the valve of the steam cylinder by the concussion of the cutters in striking the rock, consisting of the elbow, o' p', parallel bar, m, stop pawl, j', rod, g', lever, r, and valve rod, q, or other equivalent means producing the same effect.

Sixth, The method herein described of changing the valves of the steam cylinder when the cutters do not strike the rock, consisting of the roller or stud, S', inclined projection, t', pawl, j', rod, g', lever, r, and valve rod, q, or other equivalent means of producing the same effect.

Seventh, The adjustable rod, d', and the lever, r, in combination with the cutter bar, K, cross head, I, valve rod, q, and feed slide, w, constructed and operating substantially as and for the purpose set forth.

59,857.—CRANBERRY GATHERER.—Erasmus D. Miller, Dorchester, Mass.

I therefore claim my improved cranberry gatherer, made as hereinbefore described, that is, of a series of wires or theeth and a shallow cylindrical box, or the same and a handle, arranged as specified, the front ends of the teeth under such arrangement being back sloped, as set forth.

59,858. — CAR COUPLING. — Thomas S. Minniss, Meadville, Pa.

I claim, First, The triggered pin, constructed as and for the purpose specified.

Second, The weighted link holder, operating as set forth.

Third, The combination of the weighted link, triggered pin, and drawhead, constructed as and for the purpose described.

59,859. — HORSE HAY FORK. — Henry Neumeyer, Millerstown, Pa.

I claim, First, The forked locking lever, H, with its short arm or prong, adapted to press the catch, F, in against the notch, and its longer arm releasing it, in combination with the rack bar, B, and slotted handle, D, receiving the pulley, E, substantially as described for the purpose specified.

Second, The combination of the crank, M, shaft, J, cog wheel K, and spring, L, with each other and with the tube, A, and bar, B, substantially as described and for the purpose set forth.

59,860.—CAR COUPLING.—H. L. Ogden, Atkinson, Ill.

I claim the rings, C, attached to the shafts or arbors, B, in combination with the rods, D, provided with the pins, e, and the chains or cords, d, which pass around the shafts or arbors, B, and the sliding bars, E, all arranged and applied to operate in the manner substantially as and for the purpose herein set forth.

59,861.—HAND-SCREW CLAMP.—William Ormsby, Boston, Mass.

I claim a hand screw formed of the jaws, A and B, the screws, C and D, and the nuts, E and F, substantially as herein described and for the purpose set forth.

59,862.—BRAN DUSTER.—Geo. H. Reynolds, Peoria, Ill.

I claim the bran duster consisting of the ribbed cone, E, ribbed encasing cone, F, spiked stationary head, H, spiked movable head, I, winged arms, K, bolt frame, M, chamber, R, arms, U, inclosing case, T, uprights, C', weighted levers, D', and levers, E', arranged and operating substantially as described for the purpose specified.

59,863.—WATER WHEEL.—J. L. Rumrill, Hartford, Vt.

I claim, First, The cylinder, C constructed as described in combination with the radial buckets, J, and curved buckets, N the whole being constructed, arranged, and operated in the manner and for the purpose set forth.

Second, And in combination with the above I claim the collar, X, and cylinder, C, made so as to be adjusted to the inside of the wheel in order to prevent leakage, substantially as described.

59,864.—CIDER MILL.—William Shaw, New Gordon Ohio.

I claim the cider mill consisting of the toothed cylinder, B, endless apron, D, rollers, E E', adjustable pivoted bars, F, scrapers, H I, brush, J, spout, N, and chute, O, arranged and operating substantially as described for the purposes specified.

59,865.—LANTERN.—A. G. Smith, Jersey City, N. J.

I claim, First, Fastening the glass or globe, D, into the frame or guards, B, substantially as and by the means described, so that when the safe guards, B, and cap, A, are removed, the said globe shall remain fixed within the said guards, B, while at the same time it may be readily removed to be cleaned, substantially as and for the purpose set forth.

Second, The combination of the metal rims, b and e, with the removable globe, D, substantially as and for the purpose set forth.

Third, The burner shaft, i, and pin, g, in combination with the band, f, for the purpose set forth.

Fourth, The deflector, l, and square shoulder, S, in combination substantially as and for the purpose set forth.

Fifth, The frame or guard, B, provided with the groove, c, and the band, f, in combination with the globe, D, provided with the projection, a, so that the globe and the frame may be securely fastened together and the globe readily removed by passing it down through the band, f.

59,866.—TOOL.—James A. Smith, New York City.

I claim the combination of the rods, o o, with the dies, F F, jaws, A A', bar, B, and nut, c, substantially as and for the purpose specified.

59,867.—MACHINE FOR FOLDING PAPER FANS.—Roswell T. Smith, Nashua, N. H.

First, I claim the alternately sliding or vibrating folding blades, C C', or their equivalents, when used for folding or crimping paper or textile fabrics, substantially as herein set forth.

Second, The alternately sliding or vibrating folding blade, C C', in combination with the vertical gage, B, or its equivalent, when used for the purposes substantially as herein set forth.

59,868.—COMPOUND FOR LIGHTING CIGARS, ETC.—Charles J. M. Sohet and H. C. F. Molvaut, New York City.

We claim a lighting compound, made as described.

59,869.—PUMP.—William P. Squire, Paris, Ill.

I claim the combination of the pump cylinder, A, with its fixed upper and lower movable valve boxes, B B2, when the latter is connected through a suitable connecting rod, H, and other parts with the pump handle, J, or its equivalent, and when the flow of water is direct, substantially as and for the purpose described.

59,870.—HAY DERRICK.—William P. Squire, Paris, Ill.

I claim, First, The car pulley, C, constructed as described, in combination with the crane, B, and ropes, D G, substantially as and for the purpose set forth.

Second, The sliding pulley, E, constructed as described, in combination with the ropes, D G, and frame, A, of the derrick, substantially as and for the purpose set forth and described.

Third, The combination and arrangement of the crane, B, car pulley, C, ropes, D G, fixed pulleys, H F, and sliding pulley, E, with each other and with the frame, A, of the derrick, substantially as herein described and for the purpose set forth.

59,871.—MACHINE FOR MAKING RULE JOINTS.—D. H. Stephens, Riverton, Conn.

I claim the cutter head, c, working on the arbors, a, and arranged with the adjustable cutters or knives, b, feed screw, h, and binding screw, n, in connection with the movable arbors, a, and lever, d, or its equivalent, whether operated by hand or other power.

59,872.—FLOUR PACKER.—Lewis W. Teeter, Hagerstown, Ind.

I claim the flour packer, the operating parts of which consist of the platform, B, rack slide, C D, eccentric, G, inclined rack, H, slide, I, pin, F, lever, J, spring catch, K, spring lever, L, slide, O, shaft, R, gear, S T, shaft, U, packer, X, when constructed and arranged to operate together, substantially as and for the purpose specified.

59,873.—FARM GATE.—Fayette F. Terry, Port Gibson, N. Y.

I claim suspending the gate by means of the screw rod, b, and nut, c, substantially as and for the purpose specified.

59,874.—PULLEY. — Jonathan S. Tibbets, Terre Haute, Ind.

I claim the cam hook, A, when constructed substantially as herein shown and described, in combination with the pulley, B, substantially as and for the purpose set forth.

59,875.—BOTTLE STOPPER AND MEDICINE GAGE.—Samuel H. Timmons, Lafayette, Ind.

I claim a graduated bottle stopper or one made with a definite capacity by which a specific dose may be measured, and the stopper fitted either within or around the neck.

59,876.—TREADLE.—A. P. Torrence, Columbus, Ga.

I claim a treadle, hung and arranged in such a manner as to operate substantially as and for the purpose described.

59,877.—VIBRATING GOVERNOR. — Elson Towns, Morland's Grove, Ill.

First, I claim the combination of the pulley, A, pinion wheel, K, bevel gear wheels, F G H, and frame or box, E, with each other, with the driving shaft, B, the verge shaft, I, the weighted rack, L, and the frame, D, of the machine, substantially as described, for the purpose of obtaining the difference between the required and actual velocity and the application of said difference, as herein set forth.

Second, The combination of the jointed verge, X, constructed as described, with the verge wheel, W, with the pendulum, B' C', and vibrating wheel, M', either or both, and with the frame, D, of the machine, substantially as described and for the purpose set forth.

Third, The combination of the spring, W', pitman, S', lever, U, and vibrating frame, T', with each other, with the vibrating wheel, M', and with the frame, D, of the machine, substantially as described and for the purpose set forth.

Fourth, The combination of the pawl, G', ratchet wheel, H', windlass, E', and cord, I', with each other, with the pendulum weight, C', and with the frame, D, of the machine, substantially as described and for the purpose set forth.

Fifth, The combination of the spring catch, U, and pulley, V, with the driving shaft, B, with the rack, L, and with the frame, D, of the machine, substantially as described and for the purpose set forth.

Sixth, The combination of the jointed lever, O o', and stirrup, N, with the rack, L, and with the fulcrum post, P, substantially as described and for the purpose set forth.

59,878.—SWINGING POWER. — William Valentine and Thomas C. Longton, Trenton, N. J., assignors to Sehees and Charles V. Mead, Hamilton Township, N. J.

First, We claim a swing, constructed substantially as described, in combination with the pulleys, B and F, the latter being provided with the arm, H, by means of which a rocking motion is imparted to the shaft of a washing machine, and a reciprocating motion to the dasher of a churn, substantially as described.

Second, We claim a swing, constructed substantially as described, in combination with the double pulley, J, and clutches, K K', on the shaft, L, by means of which a continuous rotary motion is imparted to the shaft, L, substantially in the manner and for the purpose set forth.

59,879.—BINDER FOR SEWING MACHINES.—Geo. Vincent, Stockton, Cal.

I claim the combination of the plates, A and C, with blocks, G

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and its spur, H, operating substantially as above described and for the purpose herein set forth.

59,880.—HOISTING APPARATUS.—William S. Watson, New York City.

First, I claim the combination of the rope, A, and hoisting tackle, B C, with the hook, a, and its arm, g, windlass, D, rope, E, and hook, b, all arranged in the manner described, and employed to permit the weight or thing lifted to be transferred from the rope and tackle to the windlass, substantially as and for the purpose specified.

Second, In combination with the above I claim the spring brake, F, lever, H, and nose, d, arranged and operating in the manner and for the purpose specified.

59,881.—SPITTOON FOR RAILROAD CARS.—Ambrose H. Wells, Waterbury, Conn.

I claim an open-ended spittoon, A, having a cover, C, and valve I, both arranged to turn upon a pivot, E, substantially in the manner described and for the purpose specified.

59,882.—PEAT MACHINE.—Thomas J. Wells, New York City.

First, I claim the combination of the fixed and rotating diagonal arms or knives, a b, when placed within a horizontal frame, with spiral propelling blades, Q, substantially as described.

Second, I also claim making spiral blades or ridges, one or more, in the inside of the discharge neck, O, in direction the converse of the directions of the spiral propelling blades, Q, substantially as described.

Third, I also claim a stationary die, L, one or more, projecting through the movable bottom of the mold, substantially as described.

59,883.—DISTRIBUTING TABLE.—George Whitaker, Lewistown, Ill.

I claim a table made in a box form, and provided with a series of spouts or boxes, E, around its sides, either one or more, having hooks, a, or other means at their lower ends suitable for suspending a bag or sack or other receptacle thereto, substantially as described and for the purpose specified.

I also claim the combination with the table boxes, E, of the racks or frames, I, for receiving and holding the cards indicating the portions of mail or other matter to be placed in the same, substantially as described.

59,884.—APPLE PARER.—D. H. Whittemore, Worcester, Mass. Antedated Nov. 11, 1866.

First, I claim the cams, c c, upon the face of the gear, C, for the purpose of giving and reversing the motion of the paring knife, substantially as described.

Second, I claim the projection or rib, I I, upon the gear, C, for the purpose of tipping the knife back from the apple to admit of the easy removal of the apple from the fork and replacing of another, as described.

59,885.—MILK STRAINER.—N. A. Wright, Prairie du Chien, Wis.

I claim the combination of the rubber or other elastic lining, a, on the inside of a lower section, A, of a strainer, with the springs, b b, arranged substantially as herein shown and described.

59,886.—STEAM ENGINE CUT-OFF VALVE GEAR.—William Wright, New York City.

First, I claim the clogged sliding toe or toes, and the spirally-grooved or threaded longitudinally moving spindle, N, in combination with each other, and with the cam, F, and valves, substantially as and for the purpose herein specified.

Second, The spirally cogged or threaded spindle, N, so combined with the governor and the sliding toe or toes of the valve operating cam as to have a longitudinal movement as the governor rises and falls, and also to be capable of turning independently of the governor, as the latter rises and falls, substantially as and for the purpose herein specified.

Third, The combination of the rolling slide valves, I I', with the flexible plates, U U', substantially as herein described, for the purpose herein set forth.

Fourth, The set screws, u u', in combination with the flexible plates, U U', and valves, I I', substantially as and for the purpose herein specified.

59,887.—VARIABLE CUT-OFF VALVE GEAR.—William Wright, New York City.

I claim the combination of the revolving toothed lifter, E, eccentric, G, fast to the valve shaft and toothed and spirally grooved or ribbed longitudinally sliding spindle, C, arranged for operation together, and with the hollow valve shaft, substantially as shown and described.

58,888.—MANUFACTURE OF GUN COTTON.—Frederick Augustus Abel, Woolwich, G. B.

First, I claim reducing gun cotton to a pulp, and consolidating such pulp with or without the aid of pressure into the form of sheets, disks, granules, cylinders, or other solid forms, either with or without the admixture of binding materials.

Second, Combining with gun cotton reduced to a pulp, gun cotton in a fibrous state, and consolidating such mixture into sheets, disks, granules, cylinders, or other solid forms, either with or without the admixture of binding materials.

Third, Combining soluble and insoluble gun cotton, either when both are in a state of pulp, or when one is in a state of pulp and the other in a fibrous condition, and consolidating such mixtures into cylinders, sheets, disks, granules, or other solid forms, either with or without the admixture of binding materials.

Fourth, Subjecting mixtures of soluble and insoluble gun cotton, either when both are in a fibrous condition or when both are in a state of pulp, or when one only is in a state of pulp and the other in a fibrous condition, to the action of solvents of the soluble gun cotton, either alone or with the employment of pressure, so as to effect the consolidation of the same.

Fifth, The application to the surface of the consolidated gun cotton of a solution of the soluble forms of gun cotton or of shellac, or other suitable gums or resins.

59,889.—CANE MILL.—Walter Briggs, Green Castle, Iowa.

First, I claim the rollers, a a, with iron shafts and metal boxes, with concave in the ends of the rollers, a a and b, and convex surfaces, operating as described and for the purposes set forth.

Second, The sliding feed, H, in combination with the rollers, a a and b, and the concave, m, operating as described and for the purposes set forth.

59,890.—HOOK AND FASTENING FOR ROPES.—C. B. Bristol, New Haven, Conn.

I claim casting the clasp, A, hook or loop, B, and points or spurs, a and b, in one piece, when so constructed and shaped that in fitting, the points or spurs, a and b, may pass through the rope or cord, D, and the edges or lips, c and a', may be bent or turned over so as to firmly and entirely clasp the rope or cord, substantially as herein described and set forth.

59,891.—MANUFACTURE OF ALCOHOL AND OTHER SPIRITS.—John F. Collins, New York City.

I claim, First, The treatment of wash or mash, or other substance from which alcohol or other spirits are to be distilled, with phosphate of lime or soda, or carbonate of ammonia.

Second, The distillation of spiritous solutions at a temperature not exceeding 176 deg. Fahrenheit, for the purpose of preventing the formation of acetus and acetic acid, and also the different ethers.

Third, Having, in connection with the still or other apparatus, a pipe longer or higher than the column of water at the natural pressure of the atmosphere, for the purpose of returning any aqueous vapors to the still.

Fourth, The use of a current of suitable gas to propel the alcoholic vapors, instead of using heat.

Fifth, The use of a circulating current of air or suitable gas between the condenser and the still, for the purpose of preventing oxidation during the process, substantially as and for the purpose described and set forth.

59,892.—KNITTING MACHINE.—William Cotton, Loughborough, England.

I claim the improvement in operating the sinkers in order for the formation of loops on the main needles, such being by means of the jacks, f, and a catch bar, h, or its equivalent, provided with actuating mechanism, substantially as described, whereby certain of the sinkers are operated in succession by the jacks, and the intermediate sinkers, or those termed "dividers," as well as the rest or jack sinkers, are subsequently moved in a body, in manner as explained.

I also claim the improvement by which the beards of the needles are closed, the same being effected by means of a stationary presser, P, and by moving the needles up against it, as explained.

I also claim the vertical arrangement of the needles, d, relatively, to the stationary presser bar, P, and the sinkers, e, arranged horizontally or thereabout, as described, the same being advantageous in rendering the needles capable of being moved up to and away from the presser bar with great ease and little expenditure of power.

I also claim the combination as well as the arrangement of the fashioning needles, m, formed and provided with mechanism for operating them, substantially as described, with the comb, l, and presser, P, and the main needles, d, and the sinkers, provided with mechanism for operating them for the production of a knit fabric, as set forth.

I also claim the fashioning needles, constructed as described, viz: with a curve at and near its point, and with the groove in its shank, and extending back from the point, as set forth.

I also claim the improvement for operating the thread carriers, viz: a friction brake applied to their supporting rod, and extended from the slur box sustaining bar, as set forth.

I also claim the combination as well as the arrangement of the adjustable stops, j4 k4, provided with mechanism for operating them, substantially as described, with the thread carrier or carriers, their supporting rod and the friction brake extended from the slur box carrier.

I also claim the improvement in the construction of the thread carrier, the same consisting in making it next the needle, flat or nearly flat, as represented at k*, in Figures 15, 16, 17, and 18, the same being for the purpose hereinbefore set forth.

I also claim the combination of the adjustable stops, j4 k4, provided with mechanism for operating them, substantially as described, with the fashioning needles, and the thread carrier or carriers provided with mechanism or mechanisms for operating them, substantially as explained.

59,893.—FISH HOOK.—C. O. Crosby (assignor to The Fish-hook and Needle Company), New Haven, Conn.

I claim flattening fish hooks in the bend, substantially as and for the purpose described.

59,894.—HOT-WATER RESERVOIR FOR STOVES.—John B. Crowley (assignor to himself and Chamberlain & Co.), Cincinnati, Ohio.

First, I claim the sliding plate, D or D', framed with projections, d d', and a lug, G, in the described combination with the grooves, E E', for the purposes set forth.

Second, I further claim the combination of the lugs, G, M, screw, bolt, or pin, H, hooks, N, and studs, O, for securing the flue plate and cover to each other and to the vessel, A, as described.

59,895.—METALLIC BINDINGS.—Thomas B. De Forest, Birmingham Conn.

I claim tipping or binding the end of skirt bands with metal, when the said tip is secured to the strap by indentations oblique to the fiber, in the manner substantially as described.

59,896.—BUCKLE.—Thomas B. De Forest, Birmingham, Conn.

First, I claim the combination of the frame, A, the tongues, B B, and the sleeve, D, when the said sleeve, D, serves to hinge the tongues to the frame, substantially in the manner as herein set forth.

Second, I claim securing the said buckle to its strap, by means of the sleeve, D, around the bar and over the strap, substantially as herein set forth.

59,897.—WASHING MACHINE.—Daniel Dishart, Canton, Ohio.

First, I claim the adjustable slide, C, with spring attached, in combination with the boards, b b, as and for the purposes specified.

Second, The support, m, and receptacle, b, in combination with the box, A, and hinged cover, the whole being arranged and operating substantially as herein specified.

59,898.—TUBULAR WICK BURNER.—H. W. Dopp, Buffalo, N. Y.

First, I claim the water jacket, B and B', in combination with a wick burner, for the purposes set forth.

Second, I claim the combination of the two rings, I and K, with the pipes, C and C'.

Third, I claim the combination of K2, with a tubular wick burner, when operated as set forth.

Fourth, I claim the combination of the cone, I' and I, for the purpose specified.

59,899.—SKATES.—H. W. Dopp and Charles P. Weiss (assignors to themselves and I. Forsyth), Buffalo, N. Y.

First, We claim the combinations of the self-adjusting jaws, C C, levers, B B, and rod, D, as described.

Second, We claim the lever arrangements, E and G, in combination with rod, H.

59,900.—FIELD FENCE.—Abram Fanckboner, Schoolcraft, Mich., assignor to Almeron F. Chapin, Richmond, Ind.

I claim the braces or stakes, F, battens, C D, pins, E, in combination with the end pieces, B, and fence panels, constructed and arranged as and for the purpose set forth.

59,901.—MANUFACTURE OF WHITE LEAD.—Thos. M. Fell and Ambrose G. Fell, Brooklyn, N. Y., assignors to themselves and William Bell, New York City. Antedated Sept. 25, 1866.

First, We claim the production of a sulphate of lead, in the manner and for the purposes substantially as described.

Second, The treatment of the sulphate of lead so produced with an alkali solution, in the manner and for the purposes substantially as described.

Third, The treatment of the sulphate of lead so produced with the carbonate of either potash, soda or lime, followed by an alkali solution, in the manner and for the purposes substantially as described.

Fourth, The treatment of the sulphate of lead so produced with any alkali compound, in the manner and for the purpose substantially as described.

Fifth, The manufacture of white lead from the ores of lead or the metallic lead, or from the oxide of this metal, by the use of nitric and sulphuric acids, in combination with an alkali solution, with or without the prior treatment by an alkali compound, substantially as described.

59,902.—MANUFACTURE OF WHITE LEAD.—Thos. M. and Ambrose G. Fell, Brooklyn, N. Y., assignors to themselves and William Bell, New York City.

We claim, First, The treatment of a solution of lead with a combination of acids, in the manner and for the purposes substantially as described.

Second, The production of a basic chloro-sulphate, either by separate or complete solution or precipitation, or by treatment in one and the same vessel, in the manner and for the purposes substantially as described.

Third, The treatment of a precipitate so produced with an alkali solution, in the manner and for the purpose substantially as described.

Fourth, The treatment of a precipitate so produced with the carbonate of either potash, soda, or lime, followed by an alkali solution, in the manner and for the purpose substantially as described.

Fifth, The treatment of a precipitate so produced with an alkaline compound, in the manner and for the purpose substantially as described.

Sixth, The manufacture of white lead from the ores of lead, metallic lead, oxide of lead, or litharge, or other substance containing lead, either by separate or complete solution and precipitation on or by treatment in one and the same vessel, of a salt of lead with a double precipitant in combination with an alkali solution, either with or without the prior treatment by an alkaline compound, substantially as described

59,903.—PEGGING MACHINE.—Walter Fitzgerald, Boston, Mass.

I claim, in combination with the gear plate, b, upon which the last is mounted, and through which the feed of the shoe is effected, the mechanism which admits of both longitudinal and transverse rocking movement of the shoe, substantially as set forth.

I also claim, in combination with the peg tube, n, in the face plate, o, the cutter, p, placed in the face plate, with its cutting edge disposed as shown, so that lateral movement of the plate severs the end of the pegwood in the tube from the strip to form the peg, substantially as described.

59,904.—STUMP EXTRACTOR.—Ira Flanders, Lafayette, Mich.

I claim providing the lever, C, with the slot, m, and the recesses for the pin, F, in combination with the said pin, F, and link, g, and lever, D, arranged substantially as described and for the purposes set forth.

Second, I claim the combination of the hooks or bolts, j j j, the braces, i i i, with the bed pieces, A A, to operate as set forth.

59,905.—PASTRY ROLLER.—Joseph S. Foster, San Francisco, Cal.

I claim the combination of the revolving board, B, the roller, C, the adjustable guide rocks, D D, with the rods, e e e e, operating substantially as and for the purpose specified.

59,906.—SKATING FLOOR.—H. P. Gengembre, Pittsburgh, Pa.

I claim, First, Producing a sheet of ice for a skating floor by freezing from the under side, a sheet of water, as described.

Second, The floor, A, composed of a number of boxes, a a', etc., in combination with a refrigerating apparatus, R, arranged as described and for the purpose specified.

Third, A skating floor composed of a sheet of ice resting on the floor, A, as described or its equivalent, and kept from melting as specified.

59,907.—PISTON-ROD PACKING.—Thomas R. Grant, Newark, Ohio.

I claim a metallic steam packing composed of the sections, A, and cups, E and F, constructed as described.

In combination with the sections, A, and the cups, E and F, the spring, H, as and for the purpose described.

59,908.—BOOT HEEL.—J. H. Greenleaf (assignor to himself and Isaac N. Dann), New Haven, Ct.

I claim the heel constructed as herein described, that is to say, by the combination of the heel, A, the plates, B and C, and the elastic face, D, substantially as herein set forth.

59,909.—BOILER FEEDER.—Caleb H. Griffin, Chelsea, Mass., assignor to himself and W. E. P. Smyth.

I claim the arrangement of the pistons, c c', chamber, a, we pipe, e, steam pipe, g, part, k, reservoir, i, and feed pipe, h, with reference to each other and the boilers whereby to operate, as and for the purpose set forth.

Also in connection therewith the arrangement of the pipes, n o whereby to regulate the hight of water in the boiler, as set forth.

59,910.—PREVENTING INCRUSTATION OF SUGAR OR OTHER BOILERS.—A. T. Hay, Burlington, Iowa.

I claim the application of electricity to prevent the formation of scale or incrustation in evaporating pans or kettles, substantially in the manner herein described.

59,911.—CIGAR PRESS.—Geo. Heiss, Lancaster, Pa.

I claim the frame, A A C C, with its movable ends, B, and slats 1 2 3 4, etc., in combination with the rods, G, springs and blocks, E F, arranged and operating in the manner and for the purpose specified.

I also claim the arrangement of the open frame, A C, and its parts, in combination with the top, P, with its slats, H, and pins, I, and bottom, O, substantially made and used for the purpose specified.

I also claim the construction of the filling-in board, L, with its handled screws, in combination with the forked terminus, K N, turning press block, M, when employed for the purpose and in the manner specified.

59,912.—INSTRUMENT FOR STRETCHING BOOTS AND SHOES LENGTHWISE.—Wiley Jones, Norfolk, Pa.

I claim the above described instrument or its equivalent for the purpose of stretching boots and shoes lengthwise at the toe, and thus securing ease and comfort to the wearer, when the boot or shoe is found to be to short or to cramp the toes of the foot in the manner and for the purpose specified.

59,913.—FLUTING MACHINE.—Susan R. Knox, New York City.

First, I claim the standard, D, when constructed substantially as herein described, and located at the ends of the rollers, in contradistinction to a point between the ends, when said standard is employed in combination with the lever, C, as and for the purpose set forth.

Second, I claim the detachable bearing, F, in combination with the rollers, B B' substantially as and for the purpose specified.

Third, I claim the spring, J, arranged as described and employed in connection with the lever, C, bar, E, and bearings, F F', for the purpose specified.

59,914.—BELT CLASP.—Otto Kromer and Charles Ohlemacher, Sandusky, Ohio.

We claim the bar or back, A, the tongues, C, rod or slide, B, as arranged in combination with the belt, F, for the purpose and in the manner set forth.

59,915.—VELOCIPEDE.—Pierre Lallement, Paris, France, assignor to himself and James Carroll, New Haven, Conn.

I claim the combination and arrangement of the two wheels, A and B, provided with the treadles, F, and the guiding arms, D, so as to operate substantially as and for the purpose herein set forth.

59,916.—MACHINE FOR POLISHING MARBLE.—James Maloy, Boston, Mass.

I claim, First, Polishing marble by means of an endless band of felting or other suitable material arranged and operating as described.

Second, I claim the combination of an endless band as described, with the sliding platform, d, substantially as and for the purpose described.

59,917.—SOLAR CAMERAS.—W. H. Masters, Princeton, Ill.

I claim the shielding cone, v, and diaphragm, w, between the lenses, t u, substantially as and for the purposes set forth.

59,918.—PISTON-ROD PACKING.—James P. McLean and John Vandercar (assignors to James McLean), Brooklyn, N. Y.

We claim the combination of the cork, N N, and leaden strips, 1 2 3, for the purposes substantially as described and shown in the drawings.

59,919.—CARDING ENGINE.—Thomas McGuirk and Orin Cole, Millville, Mass.

We claim the combination of the doffer of the finishing carding engine with one of the carding cylinders and a conveying mechanism, the whole operating substantially as set forth.

59,920.—SHIFTING SEAT FOR CARRIAGES.—Christian K. Mellinger, Manor Township, Pa.

I claim the specified combination and arrangement of the top and bottom pieces, A B, braces, C D, held by pivots, P, within the boxes or slots, a' a'', and b' b'', beveled or constructed and operating in the manner and for the purpose specified.

59,921.—STAIR-ROD FASTENING.—William T. Mersereau, Newark, N. J.

I claim combining with the ring the tip, for the purposes herein fully indicated

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59,922.—Bolster Plate for Wheeled Vehicles.—Oren E. Miles (assignor to himself and Wm. B. Sigley), Aurora, Ill.

I claim the projections, M N, around the bolt holes near the ends of the plates and adapted to stand in corresponding holes in the wood work and resist both the lateral and the torsional strains, as and for the purpose herein set forth.

59,923.— Screw. — George L. Morris, Taunton, Mass.

I claim, as a new article of manufacture, a cast wood screw, combining the conical stem under the thread, thread whose convolutions are all of the same diameter except the last concave faces to the thread, rounded spaces between the convolutions of the thread, and the horizontal cutting edge for the point.

59,924.—Torpedo.—John S. Morris, Buffalo, N. Y.

I claim a blasting cartridge or torpedo, constructed substantially as described.

I also claim the blocks, H, and stays, I, in combination with the detonating tubes, b, by which the latter are secured in place, and maintained in their proper relative position within the case, A, substantially in the manner specified.

I also claim constructing the plugs, C D, with the hole for the friction rod enlarged at the outer end, when used in combination with wax, o, or other similar substance for packing the same, and also construct ng the former with the groove, h, all arranged and operating substantially in the manner and for the purpose described.

59,925.—Coal Hod.—John H. Pocock, Chicago, Ill.

I claim, First, The bottom made up of the pieces, b and c, the pieces having the flanges for connection to the body of the scuttle and for forming the hoop or bottom bearing surface as a part of them, and constructed substantially as herein set forth.

Second, The lips, a, when constructed and formed as herein recited, with the side pieces of the scuttle as described.

59,926.—Comb.—Ignatius Rice, New York City.

I claim the combination of the elastic spring band with the comb, in the manner and for the purpose set forth.

59,927.—Sifter.—N. L. Robertson, Rockford, Ill.

I claim the sifting apparatus consisting of the box, A, provided with the sieve, C, resting on the rollers, D, and the removable hopper, B, all arranged to operate as herein shown and described.

59,928.—Roofing and Clapboarding. — Samuel J. Seely, New York City.

I claim the sheet metal clapboarding, bent and united substantially in the manner described, for covering the walls or roofs of buildings, and for other anologous purposes.

59,929.—Construction of Houses.—Henry Sidle, Minneapolis, Minn.

I claim the casing, C, placed in an inclined position and used below the lower windows of the house with its lower edge buried so as to form an air-tight chamber between it and the house, as and for the purpose specified.

59,930.—Gate.—Stephen Spoor, Phelps, N. Y.

I claim adopting the gate to be elevated for the passage of swine, etc., by means of the two projections, h i, and pin, d, and securing the same in place by means of the catch, I, hanging free on the outside of the post, the whole arranged and operating substantially as and for the purposes specified.

59,931.—Portable Metallic Smoke House.—Lyman S. Stephens, Waltham, Mass.

I claim, as a new article of manufacture, a portable metallic smoke house, substantially as described.

59,932.—Window Brush.—John Stofer, Cleveland, Ohio.

I claim the brush, A, jointed handles, B C, provided with a locking device and elastic cord, E, arranged substantially as and for the purpose set forth.

59,933.—Blotting Pad.—David Walker, Newark, N. J.

I claim securing the paper to the holder by the springs, constructed and arranged substantially as shown.

Also the projecting edges of the holder, when in combination with the springs.

59,934.—Screw Clamp for Bending Axletrees.—Levi Wilkinson, New Haven, Conn.

I claim the combination of the bar, A, and screw, c, with the clamp or hook, C, when the whole is constructed, arranged, and fitted to produce the result, substantially as herein described and set forth.

59,935.—Clothes Drier.—L. C. Wright (assignor to Warren Chrysler), Lockport, N. Y.

I claim the combination of the sockets, a, and keys, b, with the particular arrangement of the rack, consisting of the bars, A and B, of different lengths, pivoted at the top to the bearings, D, the whole operating substantially as and for the purpose herein set forth.

59,936.—Method of Increasing Capacity of Oil Wells.—Edward A. L. Roberts, New York City

I claim the above-described method of increasing the productions of oil wells by causing an explosion of gun powder, or its equivalent, substantially as above described.

REISSUES.

2,395.—Harrow.—Francis Granger, Lockport, Ill. Patented July 17, 1866.

I claim a combination of the circle, b, the flanged friction roller, c, the arms, d d, the weight, e, and friction rollers, i, arranged and operating in the manner substantially as described.

2,396.—Distillation.—John F. Collins, New York City. Patented Oct. 30, 1866.

I claim the process, substantially as above described, of separating and obtaining alcohol or other volatile matters by constantly agitating the "wash" or other contents of the still or retort, by means of a current or currents of steam, or gas, or air, forced into the same and bringing the vapors in contact with currents of air from without while passing from the still or retort into the conductor which leads to the worm or condenser, as above set forth.

2,397.—Take-up for Circular Knitting Machines.—Clark Tompkins, Troy, N. Y., assignor to Henry Brockway. Patented Nov. 8, 1864.

I claim the combination in the take-up mechanism of a knitting machine of the following instrumentalities, viz.: a stationary cam, revolving frame of the take-up mechanism, take-up roll, cam lever, ratchet wheel and vibrating pawl stop (for preventing the pawl from vibrating), and variable instrument (for operating the stop), all operating in the combination, substantially as set forth.

I also claim the combination in the take-up mechanism of a knitting machine of the following instrumentalities, viz.: the revolving frame of the take-up mechanism, take-up roller, cam, ratchet wheel and pawl, endless screw and worm wheel, and variable instrument for controlling the action of the pawl, all operating in the combination, substantially as set forth.

DESIGNS.

2,506.—Coach Lamp.—Edwin Blakeslee (assignor to C. Cowles & Co.), New Haven, Conn.

Note.—Fifty-nine Patents in the above list were secured hrough the Scientific American Patent Agency.—Eds.

TO ARCHITECTS.

Plans and Specifications for new buildings for the War Department at Washington, D. C.

Architects are invited to prepare plans and specifications, and estimates of cost, for new fire-proof buildings for the War Department, on the site now occupied by the War Department and adjacent vacant ground, in Washington, D. C.

The buildings required should have a superficial area as large as the site selected will admit of. Photographs of site, and all other information relating to the subject, will be furnished to Architects desiring to compete for the work, upon application, personally or by letter, to the undersigned.

A premium of $3,000 for the first, of $2,000 for the second, and of $1,000 for the third most acceptable plans and specifications received, will be awarded, upon the approval of the Hon. Secretary of War, by the Board of Officers charged with the duty of selecting a site and preparing plans and specifications for the buildings of the War Department, under act of Congress approved July 28, 1866.

The plans and specifications must be sent to the office of Brevet Lieut. Col. T. J. Treadwell, Recorder of the Board, Ordnance Office, Winder's Building, Washington, D. C., on or before the 1st day of Feb., 1867.

The Board will reserve the right to reject any or all plans submitted, should none be deemed suitable for the purpose, as well as to retain any or all of such plans.

By Order of the Board:

T. J. TREADWELL,
23 4] Bvt. Lieut. Col., U. S. A., Recorder.

LECTURES ON CHEMISTRY AND METALLURGY.—Tickets for Prof. SEELY'S Lectures may be procured at his office, No. 26 Pine street, or from Dr. Kingsley, Dean of the Faculty, No. 25 West 27th street. 23 3

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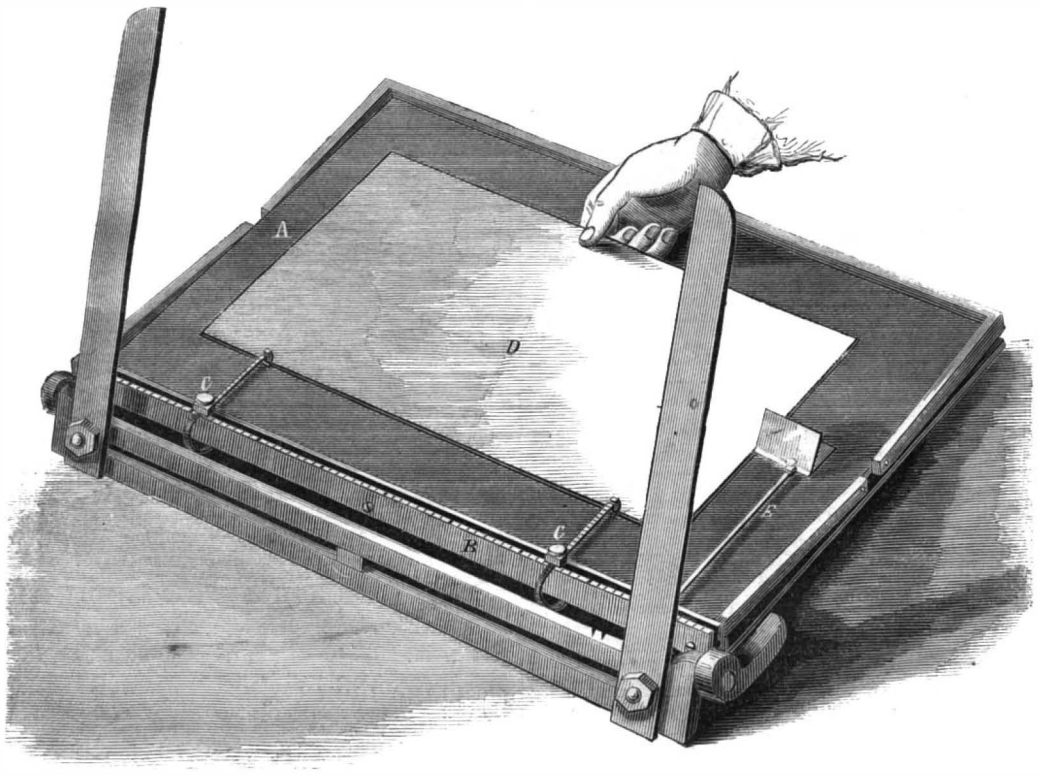
Improved Printing Gage.

Practical printers, particularly those employed on job presses, are much annoyed for the want of some adjustable gage which can be readily adapted to differing varieties of work. "Quads," pins, paste, etc., are nuisances. They have to be placed and replaced before the sheet can be properly adjusted, are liable to move, and sometimes in the way. In job offices, where frequent changes of work are necessary, the consumption of time in these details, and the consequent vexation, constitute a serious evil. The design of this improvemen t is to furnish a permanent gage which shall always be at hand and be quickly set to any job. It is particularly applicable to the Gordon, Degener, and to other job presses.



THYNG'S PATENT PRINTING GAGE.

In the engraving, A is the platen of a press. At the rear end, at B, is the principal feature of the improvement under consideration. It is a longitudinal bar, grooved to admit two or more bolts with heads which engage with the top of the bottom groove. C are the bolts or posts, slotted to admit slips of spring steel, bent at the ends to form a guide to the sheet, D. At E is a bar, jointed so that its unused end may be thrown under the platen out of the way, and carrying at its forward end a guide of thin metal, which, being in a V-form, will always come in contact with the sheet. By this arrangement the sheet can be at all times perfectly gaged, while the arrangements necessary will never be in the way of the grippers or of any portion of the press.

By the set screws, C, the gages can be adjusted to any size of sheet without loss of time. The gage rods and the gage bar are divided into scales of inches and their parts, so that the printer is aided by these in the work of adjustment. The bar with its appurtenances can be readily attached to the platen of a press. It is evident that this device is a saving of time and labor in any job office.

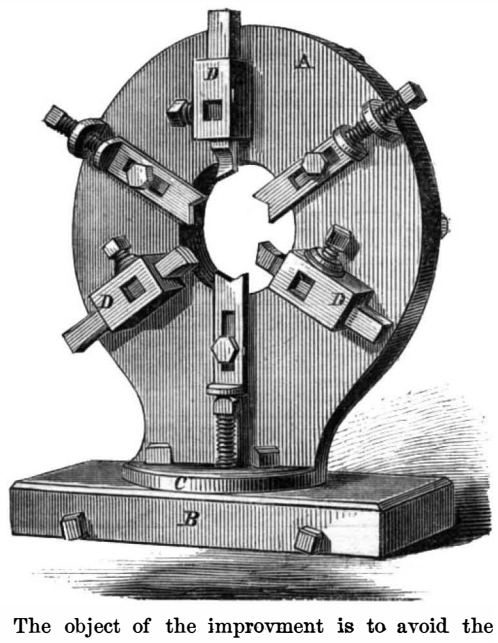
It was patented July 3, 1866, by J. Warren Thyng, publisher of the Salem *Witch*. Address for additional information, Thyng & Babbidge, *Witch* Office, Salem, Mass.

COAL, IRON, AND OIL.—Some time since we noticed at length the recent valuable work on the above subjects, edited by Daddow & Bannan. The London *Mining Journal*, in a recent notice of the volume, says: "It may safely be said that we have no single work in this couutry so thoroughly calculated to afford the superior collier and iron worker all the information he requires in connection with his business as is the book of Messrs. Daddow & Bannan to meet the wants of those similarly engaged in the United States. The work must have entailed a large amount of labor, and there is ample evidence that the labor has not been applied without being made to yield the largest results of which it was capable."

WOLFENDEN'S UNIVERSAL BOX FOR TURNING LATHES.

Usually, in a machine shop, after turning studs or bolts, they must be taken from the centers and be threaded either in a bolt cutter or readjusted to a lathe for screw cutting. The improvement herewith illustrated is intended to save a portion of the time and labor expended in this work.

It is a plate resembling in appearance the ordinary steady rest, for which purpose it can be used. The plate, A, is secured to the block, B, by bolts passing through segmental slots in the foot, C. The block is secured to the slide or carriage of the lathe, and is "fed along" with it. D are tool posts, which have shanks passing through the plate, A, that are furnished with segmental threads similar to those on the jaws of the ordinary scroll chuck, and like them engaging with a scroll thread on a disk at the rear of A (not shown). E are jaw rests set by screws in the ordinary manner.



The object of the improvment is to avoid the trouble of removing bolts or studs from the lathe, after being turned, for the purpose of threading them in the screwing machine, which is a quicker way than that of chasing them on the lathe, but renders them liable to be threaded one sided.

For cutting V-threads on bolts or studs or any thread of more than four to the inch, put block, B, on the carriage of the lathe, and the wheels for cutting the thread required. When cutting coarse threads, use three chasers or dies in the tool posts, D. The dies can be cut with the hub between centers, and the dies are thus readily formed.

For threading shafts of any size it is no less efficient, as will be seen at a glance. Long screws, as those intended for lathes, are kept from springing, as the rests, E, follow the cutters on the top of the thread and hold the work steadily and firmly to the tools. It can be used also for cutting down hubs on cast or wrought work, facing and squaring up, and for many other purposes easily understood by the practical machinist. Where the thread to be cut is square and fast, the plate, A, can be set obliquely by means of the bolts and segmental slots in the foot, C.

Patented through the Scientific American Patent Agency, July 31, 1866, by James Wolfenden, to whom, at the Jersey City Locomotive Works, Jersey City, N. J., apply for rights to make, use, and sell.

THE

Scientific American.

TO BE ENLARGED

For 1867.

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